



151

Society of Arts





AN

# ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,  
SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seats of self-fruition, the comfortableness part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—SIR HENRY WOTTON.

"Our English word To BUILD is the Anglo-Saxon Bylisan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—DIVERSIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME XL.—JANUARY TO JUNE, 1881.

OFFICE: No. 46, CATHERINE STREET, COVENT GARDEN, LONDON, W.C.

















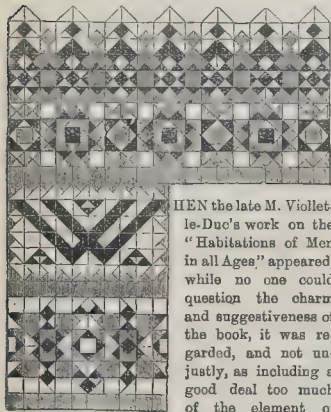
## ILLUSTRATIONS.

Pulpit in the Church of Heidingsfeldt, Bavaria: End of Fifteenth Century .....	13
The Mayer Hall and Art Gallery, Bebbington, Cheshire.—Mr. Heffer, Architect .....	14
Door, with Intarsia Work, from a Painter's Studio (Double-page Engraving).—Executed by Stovesandt, of Carlsruhe .....	18
Plans of the Mayer Hall and Art Gallery, Bebbington, Cheshire .....	19
The "Gloria" Forch, Santiago Cathedral, Spain .....	21

## CONTENTS.

House Architecture, Past and Future .....	1	The "Gloria" Forch, Santiago Cathedral, Spain .....	21	Water Question .....	26
Historical Retrospect .....	3	Christmas-day with the Aged Poor in Essex .....	22	International Exhibition of Hygiene .....	26
Christmas in Munich .....	5	The Building of Walls: Glasgow Architectural Association .....	23	The Organ of the Architectural Association .....	26
A New Hundred of Architects .....	6	The Female School of Art .....	24	The Examination, Q.—Edin. .....	26
Exhibitions of Art in Florence, Modern and Ancient .....	8	Take Advice (a Building Lay) .....	25	Saxon Works in England .....	27
The Best of Art in Italy and in Art: How to Draw .....	6	The United States of America .....	26	Nature and Technical Architecture .....	27
Technical Education in France .....	6	Glasgow Institute of Art, Lecture .....	26	Danish in Dublin .....	28
Italy and Venice .....	7	Penetration of Art and the New Leadings Market .....	26	Kidnapping .....	29
The New Art and Art Library, Liverpool .....	7	"Sanitary Science in its Relation to Civil Architecture" .....	27	Provisional News .....	29
The Iron and Steel Trades in 1880 .....	8	Large Claims for Tithes .....	27	Church-Building News .....	31
Competitions .....	8	Whitfield Chapel Burial Ground, The Jacobson .....	28	Discontinue Church-Building News .....	31
Excavations in the Churchyard of Stratford-on-Avon: Shakespeare's .....	8	London and Tenants: Misrepresentations as to Drainage—Bald .....	28	School-Building News .....	31
Tomb .....	9	Compensation Claim: Eliza's Corporation of Liverpool .....	29	Sketch of Glass .....	31
Liverpool News .....	9	Claim against a Builder for Damages .....	29	New Pulleys .....	31
Obituary .....	9	Water Supply .....	29	Books: Smith's Sketches Abroad (Bathford) Hudson & Seaman's .....	31
Peipet in the Church of Heidingsfeldt, Bavaria .....	10	Drainage and Sewage Works .....	29	Dances; Victorian .....	31
Mayer Hall and Art Gallery, Bebbington, Cheshire .....	10	Recovery of Architects' Charges .....	29	Miscellaneous .....	31
Stovesandt's Intarsia Industry at Carlsruhe .....	10				

## House Architecture, Past and Future.



THEN the late M. Viollet-le-Duc's work on the "Habitations of Men in all Ages" appeared, while no one could question the charm and suggestiveness of the book, it was regarded, and not unjustly, as including a good deal too much of the element of

romance for a professionally historical sketch. The distinguished author might have been accused, in the words of Sheridan's great Parliamentary *bon-mot*, of having been, to some extent, "indebted to his imagination for his facts": a criticism which, however true from the practical point of view, might with some readers have been rather a recommendation than the reverse. It was something new and unusual, at all events, to be asked to consider the history of the human habitation as a whole, apart from the mere practical view of it as a necessity of every-day life. There are many ways of regarding the house, and most of them, it must be confessed, are prosaic. There is the picturesque architect's point of view, which is the least prosaic, which, indeed, is sometimes so little prosaic as to fall into the opposite condemnation of being impractical. There is the contractor's point of view of it, as a piece of construction out of which to make money. There is the sanitarian, who regards it as a place liable to develop smells and gases; and the investor of money, who regards the house as property worth so many years' purchase. And none of these ways of

regarding the habitation are very exciting to the imagination. But take the subject at large and as a whole, and how interesting and picturesque it becomes. What a number of pictures arise in the mind, what a multitude of associations, all connected with and arising out of the one fact that mankind have required buildings to shelter them.

We look around in imagination on the various shapes which dwellings take in various parts of the world at the present day; all have their own significance,—one had almost said their own picturesque value. In regard to the latter point there are certainly deductions to be made, when we think of the rows of brick walls in some of our towns; the three or four lines of oblong windows in the larger houses, and the "damnable iteration" of bay windows in the smaller class of street residences. Possibly we possess, in England, specimens of about the most uninteresting forms which the human habitation has ever assumed; at all events, we can hardly be outdone in this way. There has been a great deal of fine, stately, or picturesque and pretty house-building on this island; but when our houses are dull-looking and grimy, they are thoroughly so. It may be that, if we could only recognise it, there is, after all, a suitability to the circumstances, an occult fitness of things, even in the speculating builder's street-house. It may be the true expression of the circumstances of the life that is lived in it,—most dwellings are so in one way or another; but then how very unfit the fitness of things must be in that case.

"Mist clogs the sunshine;  
Smoky dwarf houses  
Rise up round everywhere;  
A vague dejection  
Weighs down my soul."

So says a poet of the day, and well he may! But it may perhaps be asked whether the mean houses are a cause or a consequence of the dejection; and there may be as much to be said for the one view as the other. Life under natural and healthy circumstances will make for itself dwellings that will have something cheerful, characteristic, picturesque, about them. Country cottages in England have such a character, and Swiss chalets, and log-houses, perhaps, in freshly-cleared "backwoods." But

where life has become a kind of mill, grinding down to the same shape all that is put into it, then the houses take a kind of mill form, too,—a mill architecture is developed.

Not a pleasant or romantic aspect of the habitation, this; but fortunately this modern development, which will obtrude itself when the subject is mentioned, forms only a single, and may, if the present and the next age do their duty, form only a short-lived phase of house-building. We cannot say positively, perhaps, that long-remote ages, as in Egypt, may not have seen an equally dull and depressing form of habitation for the many. In days when great kingly and priestly castles held sway and built enormous temples and palaces, it is only too probable that the average house of the population at large was but mean. There could be little to spend on it where so much was spent on unremunerative structures of vast size and costliness. Probably the earliest house of all (after the cave, ready-made) was of the nature of a tent; something easily removable; and the tent-like form and tent-like frailty of structure would impress themselves on more stationary domestic architecture for long after. From the tent-like form the next step would be to the hut form; the radical distinction between the two being that between sloping sides and a pointed finish, and upright walls with a complete roof, the superiority of which, in convenience and airiness and finished appearance, over the tent form, would hardly allow any more standing-room for the latter; and then, when the hut form is established, comes the curious and long-drawn-out action and reaction of house and temple architecture upon one another. For, give the hut a verandah or porch, a deep projection of the roof with posts to carry it, and there is the temple in embryo, to begin with. But the temple was not confined to mere utilitarianism as a structure. The house for the god might be on the model of the hut, but it must be durable, rich, magnificent in scale and decoration. More costly and ponderous materials must be employed for it, and higher skill in design must be developed and displayed, at whatever cost, and that as a sacred duty. We see the most portentous development of this glorified hut archi-

ture in Egypt; and a very striking idea it gives us of the lapse of time occupied in the development of that wonderful Egyptian-temple architecture, when we think through what long stages this transformation must have gone by which the grand columned temple grew out of the hut suggestion. This was under the sway of a mighty superstition of the supernatural, which crushed the mere house, the mere human habitation, out of sight. The wrecks of the temples are still sublime in their decay; but, for all trace of the dwellings of the people, they might as well not have existed. In Greece the temple was still the main object of architecture: that the Greeks may have had convenient houses is possible; that whatever houses they built would have been graceful and beautiful, wherever there was any excuse for spending wealth over them, seems certain. But, at any rate, the best of them were so inferior in scale and importance to the temples that the dust of time has covered them. That Athens and other important cities contained thousands of habitations is historically known; but that cannot have been an important house-architecture in the main which has left so little trace behind it. But under the less superstitious and more practical as well as more wealthy Roman, the house takes its revenge on the temple. One of the first Cæsars was decreed the right to form on the façade of his house a pediment, the special feature previously of the temples of the gods. But this one fact (as it is traditionally reported to have been) was only typical of the place which domestic as well as civil architecture was beginning to assume with the progress of Rome in wealth and luxury. The pilasters and columns of the temple became attributes of domestic and civil architecture; the house rose to architectural grandeur and significance. The small rooms of the elegant houses of Pompeii, the provincial towns, are decorated with semi-architectural embellishments, which are the old temple architecture filtered down to the level of drawing-room prettiness. Where the superstitious or reverential side of human nature is in abeyance, where the commercial and practical side comes uppermost, there the dwelling takes an important place as architecture. The mansion is a sign that æstheticism and love of pleasure, the enjoyment of this life, has elbowed out superstition and asceticism; the healthy culture of this world has taken the place of the mystical contemplation of another. The religious spirit is not favourable to the development of the habitation: "Let us eat and drink, for to-morrow we die," has been a sentiment much more favourable to the growth of luxury and beauty in private dwelling-houses than any spirit of religious aspiration, which would rather write "Mene, mene," on the walls of the most gorgeous apartment. The history of Christian architecture illustrates this. In the first great uprising of Christian reform there was, indeed, little account made of architecture or art of any kind; even the religious edifice, at first, received notice of disestablishment; the Most High "dwelleth not in temples made with hands." But this elevation above all material aids to faith could not be sustained for long. The Christian soon brought back the grand features of columnar architecture to the service of the temple, and other influences moulded them to new architectural forms and expressions, till in the Medieval period the great architecture of the day is again, as in Egypt and Greece, all concentrated in the religious edifices. The house has architecturally all but disappeared, except in the form of the castle, made strong and massive for purposes of rapine, not to show forth the amenities of life. Even as late as Shakespeare's time, the church is distinguished as "the holy edifice of stone," obviously in contrast to the houses, the ordinary dwellings of his day, although, of course, there were exceptions for the great. Then followed the Renaissance, bringing back "the kingdom of this world" in unmistakable fashion, with all its "pomp and vanities," its luxury and taste, its costly, intellectual, refined self-indulgence, and again domestic architecture took a leading place; again the habitation borrowed and adapted the features of Classic temple architecture to grace and adorn itself, though with more refinement and taste, and a more just and thoughtful æsthetic application of the materials, than in the Roman days.

From the Renaissance period the house has never ceased to play an important part in the

architecture of Europe,—so far, at least, as concerns the dwellings of the wealthier class. During the Georgian period in this country it sank lowest in regard to architectural development, even more so than the generally low level of architectural art might have seemed to render inevitable; it ceased almost to be architecture in the usual sense of the word, though very likely those who designed the house of that day thought that a symmetrical cube of building with a porch projecting from one side of it represented all the architecture that a sensible man need desire for his house. In the main, however, the Italian Renaissance mansion has impressed its mark on the better class house of modern Europe more than any other form of architecture. Even the Elizabethan house is a record of modification of the Renaissance house (we are speaking now of architectural style, not of plan), combining the refinement of Renaissance style with some of the picturesque of Gothic,—a combination which the French château of the early Renaissance period displays in still better and more graceful and fanciful form. In spite of the taste for Gothic houses which accompanied the general movement in favour of Mediævalism, there has always remained, even in this country, still more on the Continent, a prevalent feeling in favour of some variety of Classic style as the style for a large mansion, as being capable of taking an expression at once homelike and grandiose. We cannot, certainly, apply such an expression as "homelike" to the class of mansion with a large portico and colonnade like the end of a Roman temple imbedded in the house, which became the fashion for some time after the days of Wren and Inigo Jones. But when this temple end,—this exaggerated and practically useless portico,—is got rid of, our house architecture on the Renaissance model shows a good deal of the architecture which is eminently successful and suitable for its purpose.

This, however, is as to large and isolated houses. When we come to smaller houses, we find two well-marked divisions, street houses, and country cottages and small dwellings. Street-architecture, as far as the average people's houses are concerned,—anything worth calling street-architecture, that is to say,—has had a very short and broken life. There has been, probably, a great amount of really picturesque street architecture, in such cities as London for example, which has perished entirely owing to its frail construction and materials; and in London, of course, partially by the Fire. What really made the sort of street-architecture which we now regard as picturesque, such as that of Nuremberg and what is left of Chester, was in great measure the fact of cities being inclosed with walls, and therefore limited in area. Hence the narrow streets, the overhanging upper stories, which look so well in a sketch; they were the result of efforts to utilise every square foot of space inside the walls, in times when to live outside the walls might be really unsafe under certain circumstances. This influence no longer operates in the more civilised parts of the world; and there are influences operating in the opposite direction, operating to produce dull uniformity and regularity, and even to compel these qualities to a certain extent. Conviction of the danger in towns of improper building construction and inflammable materials has led to legislation which it seems to have been, and no doubt always would be, difficult to frame so as to be practically applicable to all cases without almost compelling a certain uniformity of style and tending to promote the very opposite of a picturesque town architecture. It is difficult, but not impossible, to frame legislation which shall provide for sanitary conditions and security of construction without interfering too much with individual taste in building, or reducing our streets to dullness and uniformity. In the case of smaller houses in the country there has been always a great deal of picturesque character arising almost entirely from the fact that local buildings were made with local materials and in local methods. Each district had a character of its own in its house and cottage architecture, a character which was almost certain to harmonise with the landscape, from the very fact that the materials were local. The railway, the great leveller, is now doing much to modify and interfere with this local character and picturesque in country dwellings. Bricks can be easily brought where local stone would have been used by a former generation; slates are available at moderate expense where thatch would formerly have been considered

quite an adequate covering. In these and other ways the changed conditions of modern life must influence the houses of the future, be they large or small, mansions or cottages, country or town dwellings.

What now development there is in house-architecture at present is more in the direction of sanitary provision than of architectural design. Though so much remains to be done, there can be little doubt but that we are entering upon a very great and salutary change in this respect. The more enlightened action of public opinion has been aroused to the importance of the subject, and there can be no doubt that in future those who are able to build houses for themselves will not be content with their architect giving them the number of rooms they want and the architectural style they desire, but will want to know also that every precaution has been taken to remove or intercept every influence that may be prejudicial to health. The sanitary movement is fairly started, and we can have no doubt of its progress. The problem for future house-architecture is to combine sanitary fitness with architectural beauty. It is certainly not superfluous to draw attention to this point, since, for whatever reasons, it is only too obvious that the taste for the sanitary and the picturesque seem to be far too antagonistic. Some members of the profession are vexed and irritated with the requirements of sanitation, and are prone to shuffle off the responsibilities thereof on to other shoulders. On the other hand, nearly everything connected with sanitation seems to be, at present, ugly as a matter of course. The very look of the publications of sanitary publishers "boreth" them. "What a hideous-looking cover," said a visitor the other day, glancing at a pamphlet on our table. "Yes," we replied, "it is a sanitary publication." But the fault is on both sides. The sanitary reformer's work is genuine, but not beautiful. The picturesque architect's work may be beautiful in a certain sense, but unfortunately it is not always genuine, even on its own ground. It is a masquerade. The taste for it is the result of a half-view of the subject. Some architects think that the sort of thing which pleases them and their friends in their own sketch-books now, will, if reproduced, equally please in its imitated form. It may for the moment, but it will not be sketched by other architects of future generations, for more reasons than one. Not only will the fashion of taste have changed, but a new way of looking at the subject of house-building will have grown up with the increase of sanitary knowledge, and the picturesque house, with its extra gables and its twists and angles made for mere picturesque effect will not recommend itself to more practically-educated generations. For be it remembered that what we now admire as picturesque street-architecture in old towns represents also about the most unhealthy form of domestic architecture that could be, in many cases. Materials subject to much decay, close and unventilated corners, a multiplicity of weak points for the invasion of wind and weather: these are among the characteristics of the old picturesque street-views which we like to sketch. It may be found that a wider diffusion of knowledge as to the sanitary construction of dwellings will very materially alter the estimation even of the unconscious picturesqueness of the buildings of the pre-sanitary era. That which looks very pretty to those who have no practical acquaintance with the subject looks only perilous to those who have. We remember looking at Martin's picture of "The Plains of Heaven" in company with a yachting man. Our companion was indignant at the gilded barges on which the blessed were floating over the celestial sea. He should have hoped, he said, to find in heaven yachts of better build and sailing power than he had ever met with in terrestrial waters. To the landman the gilded barges might seem very sumptuous and picturesque; the nautical man only saw them as clumsy and "leewardly" craft. In like manner a generation more instructed in sanitary conditions of building may learn to look with a very different eye on what we now call "picturesque" town architecture, and associate it only with ignorance or carelessness of the sanitary conditions of building, of such primary importance in crowded towns.

Have we done, then, with picturesque house-building? We hope not; only we must find a more practical and more beautiful species of picturesque. It must be a picturesque, that is, as the French say, *choisi*, chosen, selected, deliberately

developed, not growing up spontaneously, and not imitative of that which grew up under different conditions. The picturesque of old towns was, as we have said, to a great extent imposed by the barrier surrounding the walled city of the past. The picturesque of rural houses arose from the employment of the materials and methods of the district with a kind of spontaneous freedom. The employment of the materials of the district in country building we have always urged where possible,—that is, where they are practically suitable and adequate,—as one means of securing harmony with the landscape. But the time is at least not far off when this spontaneous freedom must disappear even from rural houses. Intercommunication breaks down the barriers of provincialism in habits of speech and habits of building, and must do so too in regard to habits of building. It will become a recognised responsibility with landlords that even rural cottages must be well built and in accordance with the best and most healthy conditions in regard to materials and arrangement. In regard to town houses, we have officially recognised and legislated to this end already to a considerable extent, although the working of the legislation has not always been by any means satisfactory, partly owing, perhaps, to its attempting rather too much in detail: the really desirable provisions of the law are too often evaded or only carried out at the point of much compulsion, while the suggestion which building legislation makes towards building every house according to a uniform pattern is only too well acted upon.

The result of these considerations in regard to average house-architecture would seem to be that rural and town building will approach each other more in style and manner than before. We want in the house-architecture of towns (after the due carrying out of sanitary and constructive legislation) the recognition of the fact that it is not necessary that streets built in accordance with certain general practical legislation should therefore be marked by a dull uniformity;\* we want something of the variety and the special character which the exercise of individual taste should lead to, carried out always in subordination to the requirements of health and security from fire, and of general convenience; not, as in the old picturesque style of town, with an entire ignoring and tramping under foot of all these considerations. The rural dwelling must undergo some change in the opposite direction; some of its specially rustic character, its low unhealthy rooms and its little insufficient windows, must give place to better lighted and ventilated rooms, and the local traditions of building must in some cases give way to the use of better materials and methods. But all these conditions may be observed without reducing a country cottage to the appearance of a slice of a street cut out and put down in the country. It may be a country cottage still; but it must be a country cottage carefully and scientifically built, not one allowed to grow up in its place like a tree.

In regard to houses of the higher class we seem at present to vary between some form or other of the old Classic mansion, and a form of house which endeavors to be strikingly picturesque and homelike: the latter form much predominating among recent houses. The completely Gothic house, with high-pitched gables, has not had a long lease; it seems now to be getting quietly dropped. The ultra-picturesque house of the day we hold to be a sham to a great extent, though a natural reaction against the ultra-formality of an earlier part of the century. Many of these houses, which seem to affect to have been tumbled together in a heap, to be ingeniously accidental, will be laughed at or wondered at, perhaps pulled down and altered, as ugly things, by those who will inherit them. Our impression is that a type of house design founded on the Renaissance is more likely to command lasting goodwill than any of these picturesque vagaries. But then it must be a type produced by improving on Renaissance types, not by bringing together a number of corrupt and debased details of the decadence of the Renaissance. The reason we lean to Renaissance rather than to the picturesque for modern houses of the better class is that the Renaissance house in its best form represents the domestic architecture

of culture much more than does the irregular and studiously picturesque house. The house of a man of culture should appear studied, refined, "choisi" in its architecture; not thrown together, an "indigesta mola," however picturesquely. The fault of the Renaissance houses of this country has mostly been that they were too formal and scholastic in arrangement and style. There is no need to follow precedent in that respect. We should wish to see the gentleman's house of the future no reproduction or imitation of houses of the past, no embodiment of cooked-up picturesqueness; but a style of house recalling the most refined and thoughtful periods of society, stately without formality; home-like, but the home of dignity, education, and refinement; the home of a cultivated man and woman of the world. The present very prevalent taste for "thrown-together" houses, heaped-up roofs, little windows, and so on, seems to us essentially a taste belonging to provincialism rather than to the character of a citizen of the world, as every educated man should be. We hope to see this rather puerile taste pass away, and to see the house of the future take a more dignified and refined form, combining sanitary completeness, variety and charm in plan and arrangement (a much better kind of picturesque than simply cutting up the exterior skyline), and a certain palatial though not formal dignity,—a habitation which would appear the result both of scientific and artistic culture.

#### THEATRICAL RETROSPECT.

On October 16, 1680, Louis XIV., by a *lettre de cachet*, united into one company the two "troupes" which had till then occupied, one the Hôtel de Bourgogne, the other the *collège* in the Rue Mazarine. Paris antiquaries still point out in the gasfitters' workshop that is upon its site, the old house that Molière and his company occupied, next door to the dark and gloomy but romantic little Passage du Pont Neuf, leading down to that famous old bridge.

By *lettre de cachet*, therefore, the Comédie Française was formally constituted, and the actors became henceforth the "Ordinary Comedians of the King." What the future adventures of the illustrious society were has already been related in these pages; the departure from the Rue Mazarine to the Palais Royal, thence to their grand house in the street which now bears the name Rue de l'ancienne Comédie, and where, bricked into the façade of one of the houses, may still be seen the pediment of the theatre which the eminent architect, Orban, had designed, and of which Walpole in his letters has spoken; the later move of the company to the great theatre of the Tuileries; again later to the present Odéon; and finally, at the end of the last century, into their existing house in the Rue Richelieu.

The date 1680 figures therefore on each playbill of the "François," and proud, as well they may be, are the French of the society which still works on the rules laid down so long ago. English theatrical annals, however, are of no mean antiquity. Indeed, almost to a year a century before Louis XIV.'s *lettre de cachet*, Queen Elizabeth possessed her "servants" for her dramatic distraction. London in those days was, in fact, well supplied with theatrical amusement, when we consider that there were no fewer than eight companies of actors; and in later days, though before Shakespeare's death, what with the Globe and the Blackfriars Playhouse (this latter "the theatre"), where might be seen the King's Servants, the Curtain with the Prince's Servants, the Fortune (old Alleyn's house) with Palgrave's Servants, the Red Bull with the Players of the Revels, and the Cockpit in Drury-lane, where performed the Queen's Players, it cannot be said that London was ill-supplied with places of theatrical amusement, long before the date of the formation of the Comédie Française, for we are referring to the beginning of the seventeenth century, in the reign of James I., while Shakespeare was still alive. Indeed, as a date to set against the 1680 of the French Comedy,—putting aside the date 1583 when Queen Elizabeth appointed twelve actors as her "servants,"—in 1603 the members of the Globe and the Blackfriars Playhouse, belonging to the same company, were licensed by James I. to term themselves the King's Servants, and as dependents on the Royal household they were duly sworn into office with the usual formalities. Among these it may be stated that the actors were allowed each four

yards of bastard scarlet for a cloak, and a quarter of a yard of velvet for a cape, every two years.

Paris, in the middle of the seventeenth century,—when Molière, who, in the history of the theatre in France, takes exactly the place of Shakespeare in that of ours, had settled down in the capital after his lengthy journeys in the provinces,—was supplied with three principal theatres (not including the foreign [the Italian] "troupes" or the Opera),—the Hôtel de Bourgogne, the oldest and most renowned; the so-called Théâtre du Marais, near the then fashionable Place Royale; and, finally, Molière's own company, which, after successively giving its representations in the Louvre, the Petit Bourbon, opposite the Louvre, moved, on the death of their famous leader, manager, and chief actor (for Molière "created," with a dramatic genius that has left its memory in tradition, more than one of his great parts), to the Rue Mazarine, to the house of which we have already spoken. Each of these houses possessed its own customs and its special traditions, though all were under the same general laws.

Many changes have been effected both on the English stage and on that of France since those days, and the appearance and management of the theatre in those early times have long since taken a rank among the subjects of antiquarian research.

Very different hours from the present were kept, both by ourselves and by our neighbours, in the sixteenth and seventeenth centuries. In both countries the representation took place invariably by daylight; in France, by an order issued in the first year of the seventeenth century, the doors of the theatre were to be opened precisely at one o'clock, and the performance was to close at half-past four, from St. Martin's day to the 15th of February, and on Sundays and fête-days the house was only to be opened after the second vespers, when all the services of the day were terminated,—a custom which prevailed also on Sunday with us in Elizabeth's reign. In those days, though there were many, just as now, who were scandalised at this infringement of the Sabbath, we do not find that the Queen had any scruples on the point, for on her visit to Oxford in 1592 we have it recorded that she attended a theatrical performance on Sunday night. One o'clock with us at this time, as in France, was the hour at which the theatre was opened, the performance being often over in two hours. In the middle of the seventeenth century three was the opening hour, and before the end of the century, four. In the following century in France the representations commenced at about five, often to be continued till nine o'clock; it was not until under the Empire that the present late hours were introduced, though the excellent custom of concluding before half-past ten, or eleven at the latest, was strictly followed, as it is still in Germany, where it is a common occurrence for the theatre to close at a quarter to ten.

Both in France and in England the performance was announced by a bill, *affiche*. The playbill, indeed, possesses an antiquity that may be looked upon as highly respectable. In classic Rome playbills were not unknown, and as early as this, it was headed by the name of the author of the piece to be represented,—in the case, that is, of his fame being sufficiently established to "draw a good house." But the custom, it would appear, was lost sight of until it was revived or invented, so it is said, by a Spanish author, who lived not long before Cervantes. In England, at the same time,\* playbills placarded about the town daily announced the evening performance; as for the programmes, this innovation is attributed to Dryden. In France, before the palmy days of Louis XIV., the comedians merely contented themselves with announcing on their *affiche* that "their poet had worked on an excellent subject," "their poet" being so well known that his name was not mentioned. This custom was long continued, even after the official position of "poet" ceased to exist. As for the actors themselves, it was not till the end of the last century that they decided, or rather were made, to put their names on the playbill. As an explanation of this, it may be remarked that

\* Cervantes and Shakespeare, tradition long affirmed, both died in the same year, and on the same day, April 23rd, 1616; but it was Carlyle, if we mistake not, who first showed that there is in reality a difference of ten days in the count.

\* In some respects the existing Building Acts for our large towns exercise, in effect if not in intention, an unnecessary degree of influence over what are really architectural details, and might in this respect be reformed and relaxed with advantage to design and with no real detriment to construction.



CHRISTMAS IN MUNICH.

No matter whether the stranger in the Bavarian capital be an old resident or but a new-comer, he cannot fail in a very short time to admit that Munich well deserves its reputation as an art city; and the more he becomes acquainted with its extraordinary institutions, the more he will feel disposed to agree with the opinion of the late eminent architect, Robert Cookerell, that Prince Ludwig, notwithstanding the sad features which darken his memory, still deserves the merit of being a prince surpassed by none in his enlightened patronage of the fine arts, a prince whose name may claim the right to be, as it will be, handed down to posterity with no less veneration than that felt for those of the enlightened rulers whose names are written in the history of Greece, of Rome, and of Christendom, from Pericles through the age of Augustus, of Charlemagne, of Nicholas V., of Ercole, of Ferrara, of the Duke of Urbino, of Como de' Medici, and more than one other, down to the still-lamented consort of our beloved queen. Everywhere in Munich the institutions to be met with are living evidences of King Ludwig's enlightened intentions, and we are certain that there are many inhabitants who owe their position to his advanced views, and who have reason to bless him for the comforts that they have around them.

Still it is easy to see that the ambitious art-city of Bavaria is not above imitating its conquered rival even in those little arts which take so large a place in the strictly commercial minor commodities, which, after all, minute as they are, have gone far to build up the gigantic reputation for taste that France, and especially Paris, has so long held, and will long continue to hold, in the estimation of the world, civilised and uncivilised. At this season of the year one is more reminded of this fact than perhaps at any other. The industries of Paris and of Nuremberg, with the approach of Christmas, take a most conspicuous place in the handsome shop-windows, almost overwhelming in their attractiveness the delectable appetisers from Turkey and from Holland, overwhelming even the barrels of Russian caviar and Spanish olives, which shine out to tempt, and which occupy no little place in the estimation of a people who drink heavily. Even the small consumers of beer in Munich, if there be any weaklings, must be admirers of the well-designed and cleverly reproduced goblets, beakers, glasses, punch-bowls, and liqueur sets, but especially of the beer-mugs that are displayed in so many well-arranged windows. Without doubt, and with no desire whatever to allow ourselves to be carried away by English predilections, our own Lambeth Doulton supplies to Munich the most perfect beer-mugs that are to be met with outside the National Museum, or inside the few well-kept private china-closets. We must not be ashamed to confess that we were on the point, the other day, of purchasing a cheap beer-mug to carry home with us as a characteristic specimen of the pottery of Bavaria, when we observed the English maker's peculiar and admirable style, which, for the moment, we had not suspected in the mug before us, standing alone as it did in the midst of so large a family of less-favoured fellows.

Local peculiarities regulate to some extent the show made. Nuremberg toys, so misleadingly termed Dutch, abound in the shop-windows to recall a branch of industry of highly respectable antiquity, but which has sadly fallen off in the care and taste with which its pretty wares are manufactured. There are still exhibited dolls' houses, fitted up with all the domestic requisites on a minute scale, but they show a curious decline on the beautiful old models which exist in most of the museums of the large towns in Germany, and of which the South Kensington Museum has possessed for several years two very perfect examples which always attract the attention of the public. Indeed, when one considers the interest that we attach to such models of the interiors of the houses of our ancestors, how much it is to be regretted that the toy-makers of to-day should be so careless in the dolls' houses they now put into the market. To reduce to statistics the tons of lead soldiers that figure in the shops would be a task requiring some industry. One feature in the German Christmas never fails to recall many a happy recollection of home, the Christmas tree and its pretty little wax-candles and glitterers. It is easy to see that in this feature the influence of

France is long likely to remain ineffective, though in so many other directions its pressure is easy to trace.

Tempting fads and novelties for the writing-table form the specialty of one set of shops; beautiful flowers, or pretty *biblots* of every imaginable nature, make up the feature of others; in fact, all the familiar Christmas artillery of temptation is brought to play at a moment when expenses are first being seriously looked into, and when that grim duty of preparing the financial estimates for the forthcoming year shows so many the necessity for the strictest watchfulness. And then it is the season for putting aside all thoughts of fasting, a season which nature has kindly supplied with dainties for the never-failing occasions of conviviality, and, judging by the shops in Munich, it cannot be said that the foreign provision-dealers have neglected to push their wares into the furthest markets. One is reminded of the old relations of this part of the world in the past with the East by the luscious figs, which seem to have boxed up with them the glowing sun of Asia Minor absorbed as they lay on the house-tops but a few weeks since to be dried, contrasting with the equally full-coloured salmon from the chilly Northern Ocean, and the silvery herrings from Holland. But all these luxuries are costly, and there are many other points to be considered. Here, at least in Munich, one is not over-entertained, as one is in the big capitals, where life is daily increasing in expense. Times are indeed hard when the poor artisan has to pay in Paris his ten louis yearly rent for a garret, where he is burnt in summer, in winter frozen, and in the rainy season flooded out. Nor is the wealthy tenant much better off who pays his 400l. for his grandiose *appartement*, which, notwithstanding vulgar ostentations of comfort and hygiene. Nor is the imagined wealthy landlord to be much envied, with taxes weighing heavy, and his apparently exorbitant rents barely repaying him the purchase of the land. Why those whose means are inadequate to meet with the expense of life in Paris, and yet who can get away, still stay, has ever been a mystery to those who do not know the fascination of town life,—that privilege possessed by the townsmen of the knowledge that all the pleasures enjoyed by the wealthy are within his reach had he the means,—a sorry satisfaction, some may say, but one which acts with a potency that it is impossible to deny. Here in Munich money is made,—to spend in Munich? Hardly. It is the privilege only of a few great cities in the world to fascinate and attract the spending public, and Munich, delightful as it is, cannot be said to be one of these. In vain the authorities may imitate, in vain the tradesmen endeavour to feebly recall, the marvels of the capital.

Christmas, however, gives a new life to everything. Before the doors of over-crowded shops stand unpacked cases deposited by drays and wagons, which, curious to say, seem never to be seen in the streets, and emulation is actively spurred on each tradesman in the customary decoration of the window-show. At home all sorts of pleasant surprises are being prepared for the little folks, who here in Germany are worshipped, and among the elders the gatherings of the season are being arranged when old friends and old recollections are to be renewed, and mutual misunderstandings explained away. For an art city it is surprising how little, outside music and the theatre, seems promised to break the period of forced stagnation which the short dark days of winter, relieved only by blinding reflected light from the snow which we expect every day, bring; we have no winter exhibition announced; it will be, in fact, a genuine old-fashioned artist's winter, such as will recall the old days,—sketches hauled over in friendly and professional gatherings, endless tales of times gone by, of failures, of successes, and of promises for the next year.

It would be difficult to say where are to be found the most attractive shops; whether in the broad Maximilianstrasse or in the older streets, or in the picturesque Marienplatz, with its two quaint fountains, under the recently skilfully-restored town-hall. There, by the way, we see how satisfactorily and completely the so-called Gothic style may be adopted, not only for the highest objects for which buildings are constructed, but for the merest commonplace necessities of retail business. As we see the well-arranged shops here on the ground-floor of the

Rath-haus, it is surprising to observe how well the pointed arch, with its well-designed iron frame-work, can be made to take the place, without offending the eye, of the ordinary shop-window. Even the quaint little shops opposite, with their counters opening on the street, untouched from the days when they were first established under the unrestored and thickly white-washed pointed arches, have put on a gleam, as they have done perhaps five hundred times and more as each successive Christmas has come round; for here in Munich we are living in a city of no small antiquity,—a fact which the hasty visitor is somewhat apt to forget at the sight of the numerous modern buildings which have made the reputation of the Bavarian capital. But relics of the old town remain, enough to recall to the imaginative mind the grim old times when the barons fought and defended themselves and celebrated their Christmas in the genuine old style with which romance has made us all familiar.

Munich.

A NEW HANDBOOK OF ARCHITECTURE.\*

THE German architect Semper said, as early as 1847, that "We [the Germans] are as rich in works on architecture as we are poor in works of architecture, such, namely, as really belong to us and art." The words of the departed master may be repeated at the present day. Varied as are the numerous works on the several branches of German technical literature, there is still a very sensible want of a comprehensive work, comprising in its scope the fertile field of overground architecture, and treating it from the point of view of modern art and science. There was still wanting for the practising architect a suitable book of reference and for the pupil of technical high-schools and academies of art a compendium which would serve him as a guide in his studies.

To attain this object, to provide such a guide and adviser for the various grades of the architect's profession, it required the combination of wide learning in the different branches of architecture; a single individual would have failed where a multitude of counsellors have been successful. It was only by a judicious division of labour that a work embracing all the various aspects of architectural science,—the several departments being taken in hand by those most conversant with them,—could be produced. Guided by considerations such as these, the projectors resolved to call in the aid of other competent men in the production of a "Handbook of Architecture" which should be a standard work for future generations of German architects.

We have received the prospectus and two initiatory parts of this work. As designed, the latter will be of a most comprehensive nature, it being the intention to publish it in twelve volumes. It will be divided into four principal sections, including, respectively, (1) a general treatise on overground architecture, (2) the various architectural styles, (3) overground construction, and (4) the design and planning of buildings; as well as an appendix on the laying out and extension of cities and towns.

The publication of the four sections will be proceeded with simultaneously. The commencing part of the first section, on overground architecture generally, comprises a theoretical and historical sketch, the technique of the more important building materials, statics of overground constructions, and the various architectural forms. The introductory sketch is from the pen of Director Dr. A. Essenwein, of Nürnberg; the remaining portions of the section are and will be written by Regierungsrath Professor Dr. W. F. Exner, of Vienna, Professor H. Hausschild, of Berlin, and Adjunct G. Lauböck, of Vienna. The chapters received treat of stone, ceramic products, lime, cement and mortar, concrete, wood, and iron. The second portion to hand, the commencing part of the second great section, "Architectural Styles," deals with the architecture of Greece, contributed by Baurath Professor Josef Durm, of Karlsruhe. Other writers contributing to this portion of the work will be,—for the architecture of the Middle

\* "Handbuch der Architektur." Unter Mitwirkung von Fachgelehrten herausgegeben von Baurath Professor Joseph Durm in Karlsruhe, Baurath Professor Hermann Ende in Berlin, Professor Dr. Eduard Schmitt in Darmstadt und Professor Heinrich Wagner in Darmstadt, Darmstadt: Joh. Ph. Diehl, 1880. To be completed in twelve volumes.





as truly deplorable, and as being responsible for cases of serious illness to the executive staff and to the patients, the sanitary offices in the new building are practically out off from the air of the main building, and are presumed and believed to be absolutely safe. The architectural features are described as being of "Rustic Gothic." The building is being completed by contract by Messrs. Holme & Nicol at a sum which is stated to work out at the rate of 61d. per cubic foot.

#### THE IRON AND STEEL TRADES IN 1880.

INCREASINGLY the iron and steel industries are becoming the controlling industries of Great Britain, and the experience of the year 1880 proves this to the fullest extent; for the activity in these trades known at the beginning of the year has very materially benefited the great carrying industries, has added to the stimulus which has been more slowly felt by other trades, and has largely added to the circulation of money, and to the general revival that has been experienced. It is true that the high prices for iron and steel that were reached at the end of the first quarter of the year have been departed from, and that the rates that have been reverted to are very low; but the large trade that was then done has been even increased, and the close of the year finds the prospects of the great trades very much brighter than could have been hoped. It is long since there has been such an addition to the production of iron and steel in all the chief branches as there was in the year 1880, and the stock returns show that the bulk of this has passed into consumption. There are variations, it is true, in the degrees in which the different branches of the iron trade have benefited, and also in the benefit that has been reaped by the several producing districts, but generally it may be said that the whole of the iron and steel trades are steadier now, and are fuller wrought than they were a year ago.

It will be some months before the official returns of the output of iron are made; but it is clear that there has been a marked advance on that of the previous year. The total production of iron has been much above that of 1879; the average production of the furnaces is also more; and though prices closed low, yet the cost of production has been sensibly less than that of the average of recent years. The chief district for the production of ironstone and of pig iron is that of Cleveland and Durham, and it is evident that in that great centre the production of 1880 was much in excess of that of its predecessor. In 1879, the production of ironstone in the Cleveland district was about 4,750,000 tons; in 1880 it is believed that it will have advanced to about 6,500,000 tons, which is a larger advance than that of any recent year. And to this is to be added the quantity of the rich and pure Spanish and Elban ores that are imported for use in the local steel works. From these ores, there has been smelted, it is computed, about 2,500,000 tons,—an advance from 1,781,443 tons in the previous year. Out of the large quantity of iron thus produced, there have been nearly one million tons sent to other districts,—to Scotland, Germany, Wales, the United States, and other consuming centres, and this amount of iron sent over seas to these districts is larger than that in any year in the past history of the trade. One of the chief branches of the manufactured iron trade, that of the manufacture of iron rails,—which existed to such an extent in Cleveland and Durham that one-half of the whole of the manufactured iron produced a few years ago used to be made in that form,—has collapsed; and though the trade in shipbuilding iron has grown great, yet the production of manufactured iron, estimated at about 500,000 tons for the year, is slightly less than the maximum attained a few years ago. Partially compensating for the loss of the iron-rail trade, the steel trade has grown in the North, and to such an extent that it is believed that there were produced about 100,000 tons of steel in the Cleveland and Durham district in the year, chiefly in the form of rails. It is true that this immense output of iron and steel is at comparatively low rates, but, with the one exception of pig iron, it is believed that there is in the rates a very fair profit,—the cost of production being exceptionally low. It is certain that from that vast output there has been an immense addition to the profit of the North, to the activity in related

industries, and to the general extent of the trades of the whole of that district. And substantially the experience of the North-east of England has been that of the whole of the great mineral districts. The railways which serve the two chief places of those employed in the production of iron and steel had their traffic increased in 1880 over that of the previous year by the large addition of 500,000; and this fact is in itself an indication of the extent and value of the influence of the great revival in the metallurgical industry.

The great change that has been impending in the iron and steel trades may be said to have been inaugurated during the year. There has been, on the one hand, a slight increase in the tendency to use steel for vessels instead of iron, and there has also been the commencement of the working of that basic process which sets free for use in the steel manufacture the large and widely-diffused iron ores that had previously been rejected on the ground of their being impure. It is evident that in the future there will be from these two causes a greater rapidity in the change. At all the shipbuilding centres at the present time there is the utmost briskness, and the vessels in course of construction are almost exclusively of iron or steel, wood being scarcely used at some of its old strongholds even, such as that of the river Wear. And it may be added that the use of steel is occasional rather than regular, some of the shipbuilding ports contributing only one vessel to the number of the steel-shelled ships. Practically the great bulk of the vessels that have been built are of iron. But the occasional introduction of steel at a time when the difference between the prices of the two kinds of metal is so great, is a proof that the more enduring metal will be preferred in a much greater degree as that margin is reduced. Hitherto one of the causes of the largeness of the difference in price has been the limited area in which suitable ores for the steel manufacture could be found. But one of the fruits of the success of the basic lining process of which metallurgists have made so much of recent years is that the ores that were rejected as unfit for steel manufacture may now be used, and it is evident that not only will there be a possibility of a production of steel in districts where it was not previously made, but the tendency must be to cheapen the cost of production. There is no probability of the cheapening of the cost of production of manufactured iron, except so far as the materials used may vary, and these are at the present time at a very low rate. Hence it may be assumed that the margin of difference between steel plates and iron plates will be reduced, and thus the tendency will be necessarily to the abridgment of the use of iron for shipbuilding, and towards the substitution of steel. We have seen how, from the same causes, the use of steel on railways has for many purposes supplanted iron, and though it may be much slower in the case of vessels, yet the tendency is in that direction. The events of the year 1880 in the iron and steel trades have given an impulse to it the result of which will be afterwards seen.

Another, and not the least, of the events in the iron and steel trade has been the remarkable history of the revival and partial collapse of the iron and steel demand from the United States. At the beginning of the year there was an intense demand for crude iron and for old iron,—for what was practically the raw material. That has passed away, leaving, however, a normal demand for those qualities of iron that have been long sent to the United States. Not only are large quantities of railway steel being sent, but there is also an increased and increasing quantity of the fine and costly steel articles made in Sheffield being shipped for the United States, so that the trade in iron and steel goods continues changed, but little diminished in value. And it is a truism to say that the manufactured steel is by far the most valuable of the two trades. It is worth note, too, that so far as the crude iron trade is concerned, the demand that has temporarily collapsed for the United States is replaced in very considerable degree by the growth of the Continental trade, and by that at home especially. A very great increase in the home consumption of iron and steel is apparent, and that increase is likely to continue, so that, though the prices are low, that lowness stimulates the trade, and gives a remarkable fulness to the extent of the production of iron and steel. Under these circumstances, with a

full demand, with low but generally profitable prices, and with a growing home consumption, it may be said that the prospects of the iron and steel trades are bright for 1881.

#### COMPETITIONS.

*Raikes Memorial Church, Gloucester.*—The committee for promoting the erection of a church in the South Hamlet, Gloucester, as a memorial of Robert Raikes, the founder of the modern Sunday-school system, have adopted the designs submitted by Mr. Capel N. Tripp, architect, Gloucester. Forty sets of designs were submitted. The chief characteristics of the selected design consist of nave and aisles, transepts and choir, which latter occupies one bay of the nave arcade, and is enclosed by a low stone screen, the sacristy having merely the requisite space within the kneeling step; the organ-chamber is placed on the south side of the choir. Distinct vestries, with entrance-lobby, for clergy and chorists, are provided; and means of ingress and egress for the general congregation are supplied by three porches, that on the west being especially intended for exit. It is proposed to fit the church with open benches accommodating 800 persons, those intended for children being placed on the north of the choir. The font is placed immediately under the west window. The style chosen is that of the Plate Tracery period. Provision is made for a tower being built at some future time at the south-east end of the nave. A bell-cot, towards the east end of the nave roof, forms part of the design. The nave fittings are proposed to be executed in red deal, and those of the choir in selected pitch-pine; and the former material will be used for all exposed timbers in the roof, which will be covered with Broseley tiles. The form of memorial suggested by the architect is the introduction of stained glass, having special reference to the life of Raikes, and a series of windows with a bas-relief of an appropriate nature. The conditions fixed £500, as the sum to be expended in the erection of the church, exclusive of tower and spire. The committee state that, in order to help them to arrive at a decision, they "obtained the assistance and advice of persons well versed both in church-building and architecture."

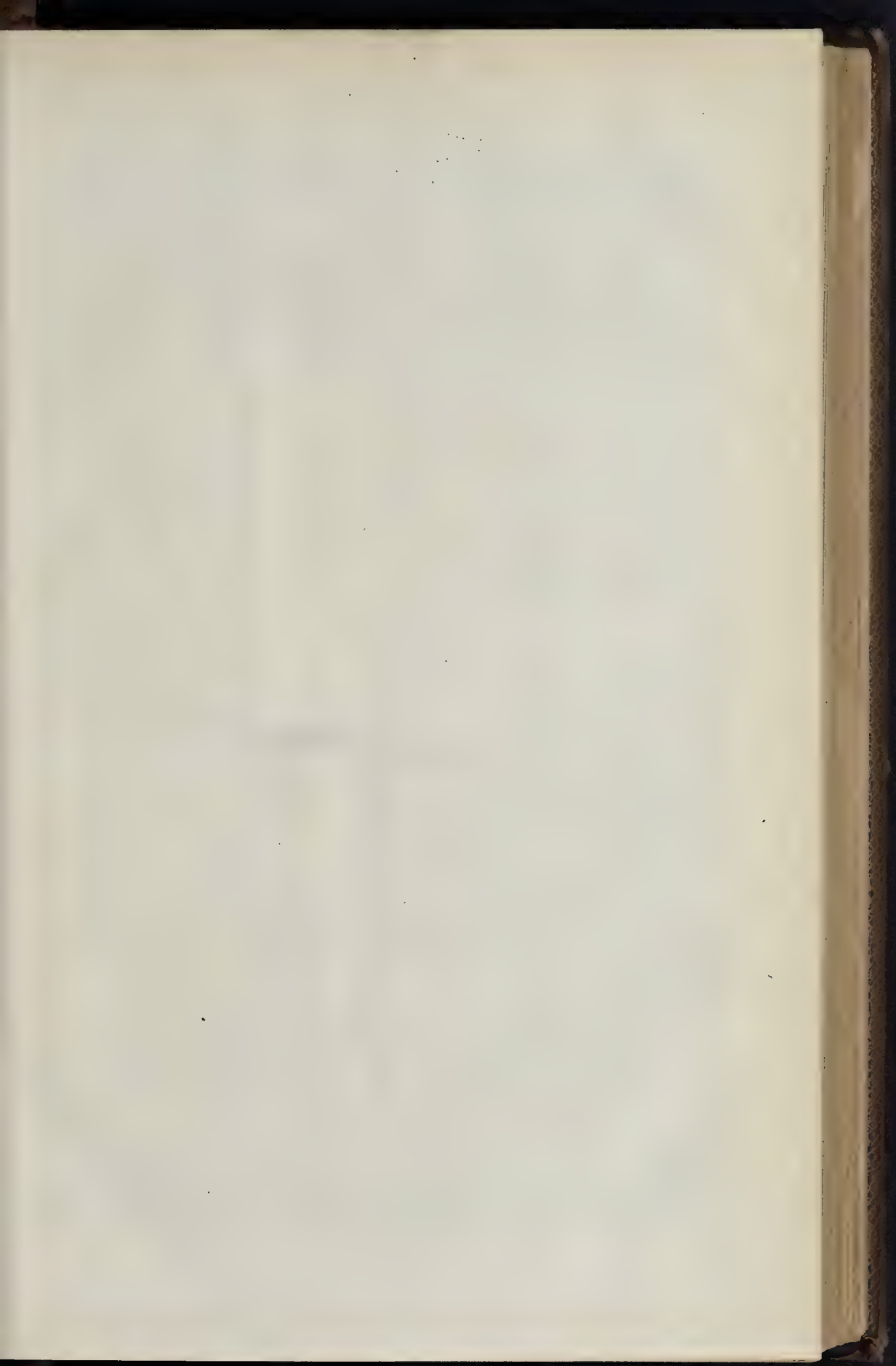
*Hanley Congregational Church.*—The members of this church, having decided upon the erection of new buildings in High-street, invited designs from the following architects, viz., Mr. John Sulman, London; Messrs. William Sugden & Son, Leek; and Mr. O. O. Ellison, Liverpool. The committee have unanimously decided upon the plans of Messrs. Sugden & Son, and the works will be pushed on forthwith. The buildings will be in the rectilinear Gothic style, of thin red local bricks, with red Mansfield stone dressings. The following accommodation will be provided: chapel with galleries and transepts, to seat about 1,000 people; lecture-hall, to seat 200; tower and porches, narthex, organ-chamber, minister's and deacons' vestries, large schoolroom, with about twenty class-rooms, teachers' social meeting-room, kitchen, scullery, and other conveniences.

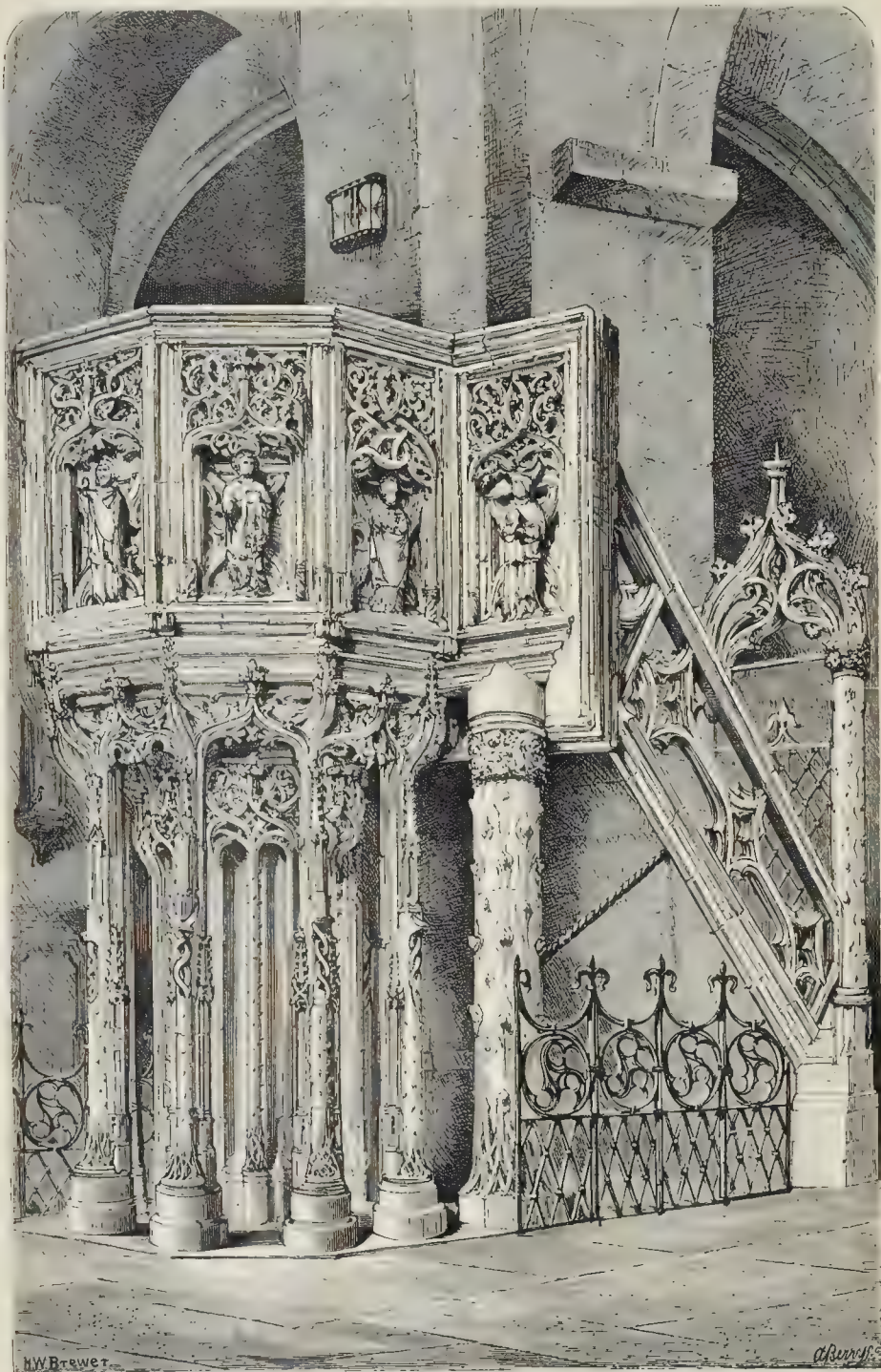
*Liverpool School of Art.*—Mr. Henry Walker writes denying the correctness of part of Mr. Sharp's letter, but we cannot find space for the communication.

*Subsidence of Ground at Blackheath.*—Some curious falls of earth in various parts of Blackheath during the past few months have (says a daily contemporary) caused scientific men interested in the neighbourhood to take steps to investigate, if possible, the causes of these local landlids. Sir G. B. Airey, the Astronomer-Royal, recently received a reply from the Metropolitan Board of Works, to the effect that the Board did not feel justified in spending public money in any explorations that might be entered upon; but at a conference of the Lewisham and Blackheath Scientific Association and the West Kent Natural History Society, a discussion took place upon the subject of these disturbances. It was estimated that to properly investigate the matter, excavations to the depth of 100 ft. would be necessary, and as this would entail a probable large expenditure, it was considered that a more practical plan would be to take up a core of the strata by boring. It was ultimately resolved, upon the motion of the Rev. Brooke Lambert, vicar of Greenwich, to appoint a committee to institute preliminary inquiries, and to report upon the probable cost, &c., of the proposed work.

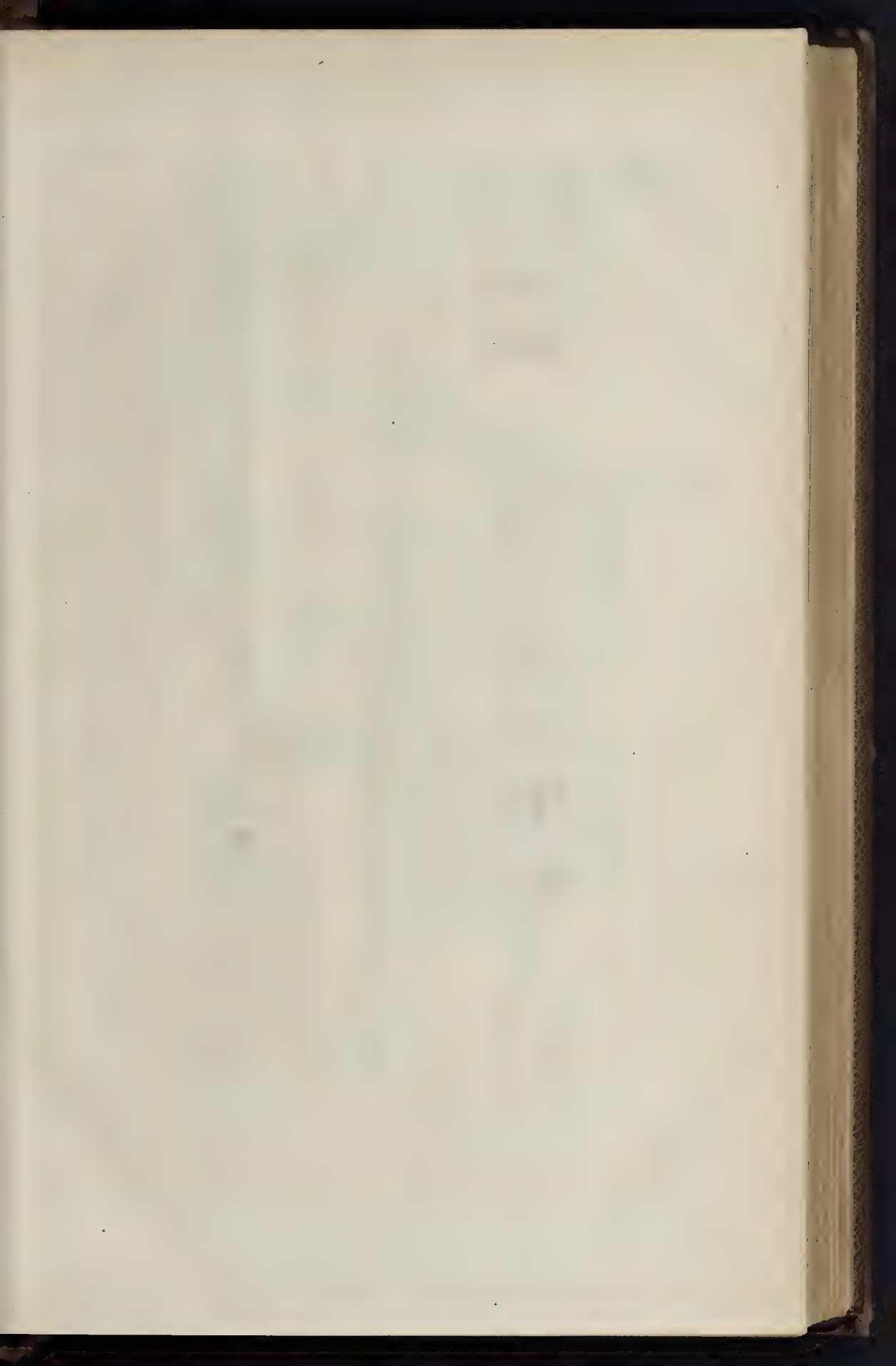


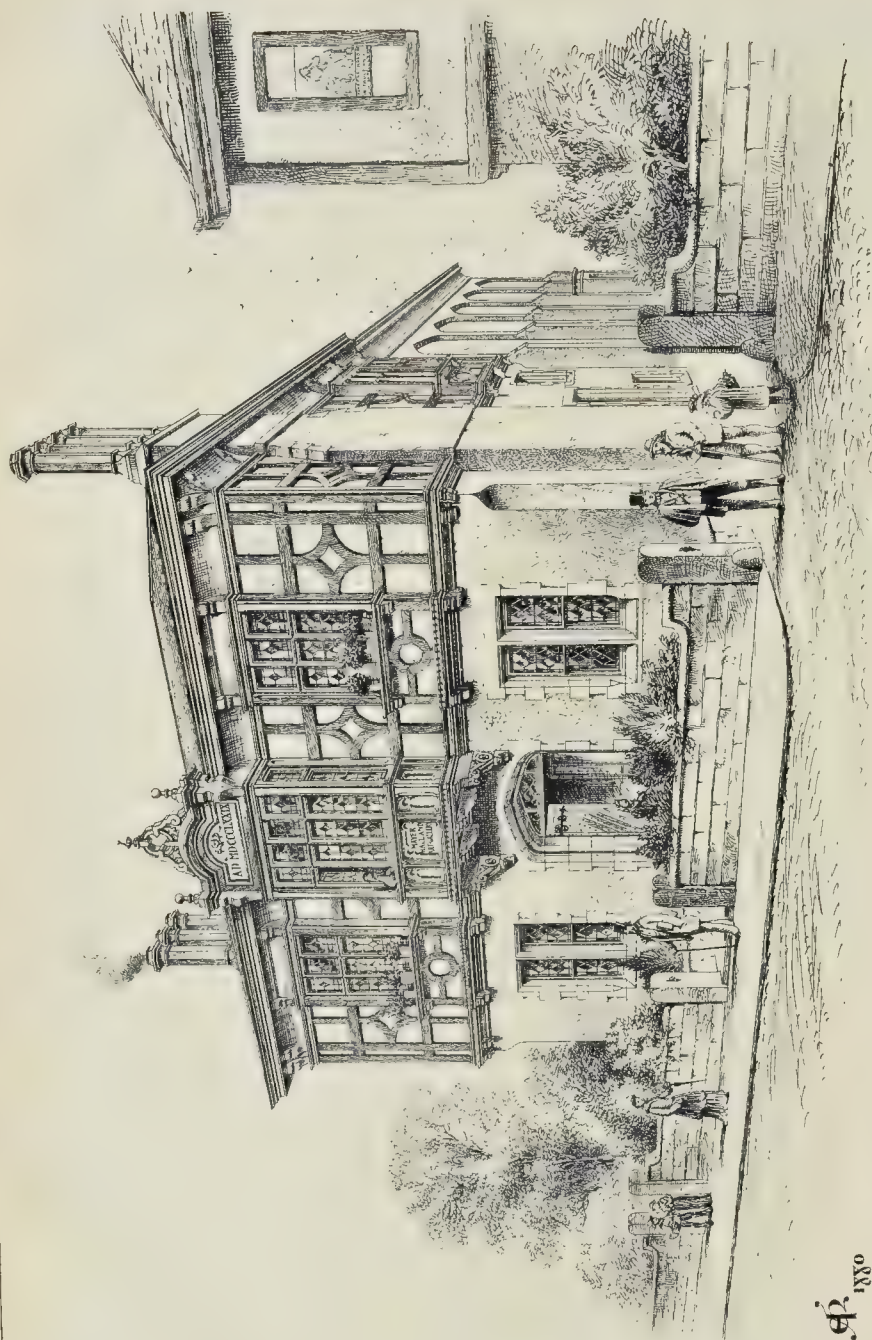






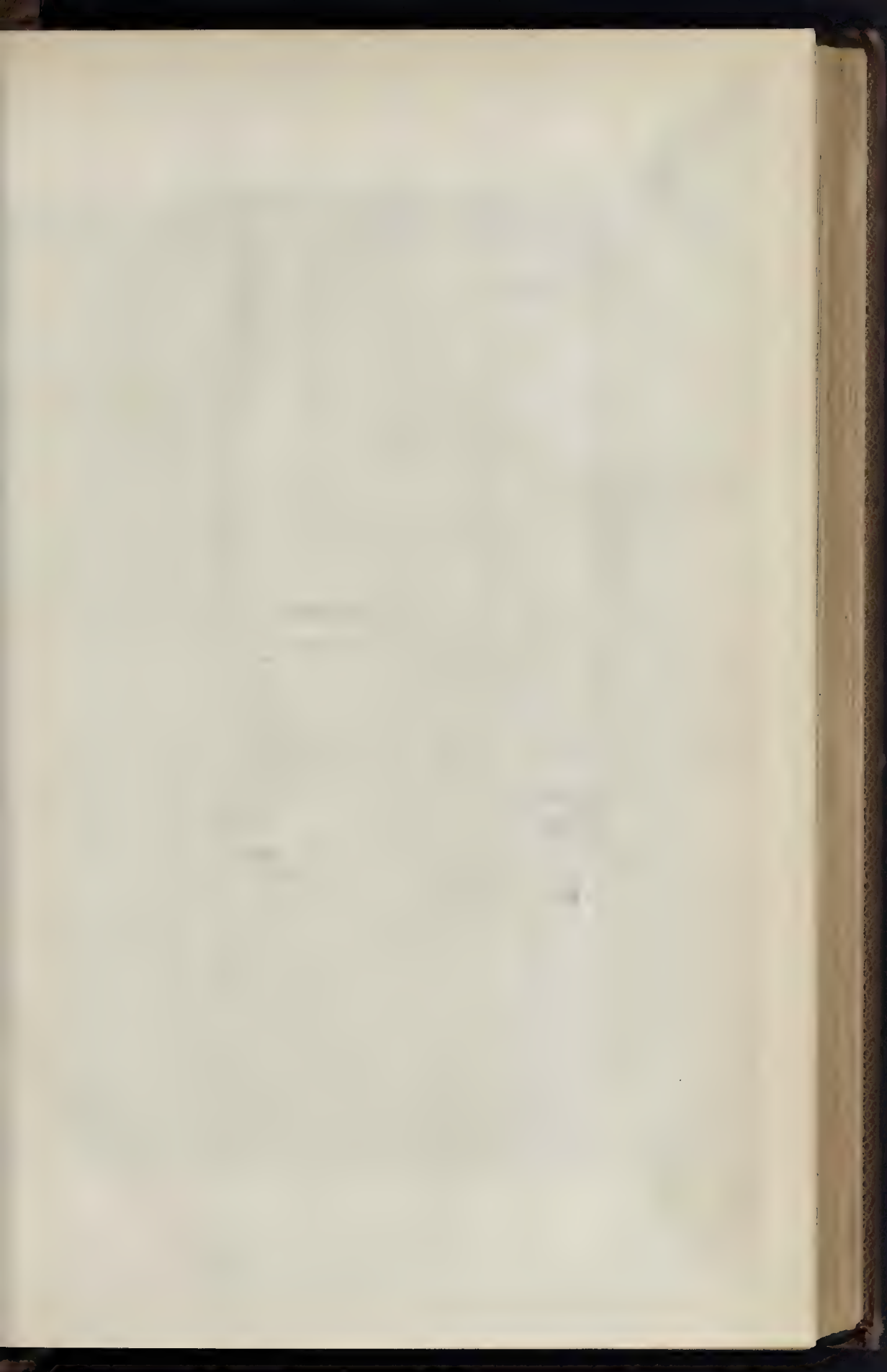
PULPIT IN THE CHURCH OF HEIDINGSFELDT, BAVARIA. — END OF FIFTEENTH CENTURY.





42.  
1880

THE MAYER HALL AND ART GALLERY, BEBINGTON, CHESHIRE.—MR. HEFFER, ARCHITECT.







Scale of Feet  
 0 5 10 20 30 40 50 60 70 80 90 100

DOOR WITH INTARSIA WORK, FROM A PAINTER'S STUDIO.—EXECUTED BY STÖVESANDT, OF CARLSRUHE.









THE "GLORIA" PORCH, SANTIAGO CATHEDRAL, SPAIN.























## ILLUSTRATIONS.

The Presbytery of St. Aloysius, Oxford (Plans, 49).—Mr. Wilkinson, Architect.....	44
Cologne Cathedral, Restored: View of South Side (Double-page Engraving).....	46
Statue of David d'Angers, on Monument erected in Angers.—M. Louis Noll, Sculptor.....	61

## CONTENTS.

The Æginetan Marbles at Munich.....	31	Cultivation of Land Abroad and at Home.....	51	Can a Builder Charge for an Estimate?.....	57
Angels and Dragons in Art.....	32	The London and North Western Railway.....	53	Proposed Font for the Parish Church, Sheffield.....	57
The Burlington House Loan Exhibition.....	33	The Annex to the Charing Cross Hotel.....	54	The Origin of the Architectural Association.....	58
The Grosvenor Gallery.....	34	An Improved Mode of Warming and Ventilating.....	54	A Surveyor's Problem.....	59
Official Commemoration of the South Sea Bridge: Iron in Construction.....	39	Business Meeting of Royal Institute of British Architects.....	55	Compensation Cases at Liverpool.....	59
The Trade-carts' House and Garden.....	39	International Sanitary and Medical Exhibition.....	56	Warning of Buildings.....	59
The Patent Laws, and their Influence on Trade: Civil and Mechanical Engineers' Society.....	40	Mortar: for Fresco and Building Purposes.....	56	New Exchange Station, Liverpool: Competition.....	59
Art-Union of London: The Loss of "The Revenge".....	41	Sale of a Building Estate at Sutton.....	57	Stone at Westminster Abbey.....	59
The Presbytery of St. Aloysius, Oxford.....	42	Building in Northumberland Avenue: New Theatre.....	57	The Spire of South Hackney Church.....	59
Cologne Cathedral Restored.....	43	The Church of the Holy Trinity, Crouch Hill, Hornsey.....	57	"Quantities".....	59
Monument to David d'Angers.....	51	Brickmaking in Britain: Alleged Nuisances.....	57	The London Water Question.....	59
		A New Municipal Buildings Competition for Glasgow.....	57	Sewerage Matters.....	59
		Royal Academy Architectural School.....	57	Miscellaneous.....	59



### The Æginetan Marbles at Munich.

IN the year 1812 was lost to England one of the greatest treasures of art that the industry and perseverance of archaeologists have yet discovered. Not even the Parthenaic marbles, not even the unearthed history of Heracleum and Pompeii, Layard and Botta's Assyrian or Ninevite excavations, the Campana relics, the Rosetta stone of Bunsard, or that extraordinary treasure, the sarcophagus of Belzoni, the Cyprian antiquities, or the recent finds of Schliemann, not one of these can be said to be of interest superior to the discovery,—in which took such an active share our accomplished countryman, the late Professor Cockerell,—of the Æginetan marbles now reposing at the "Glyptothek" of Munich.\* The somewhat pretentious and scantily-filled halls of the museum contain little else but these choice treasures. The quaint and archaic statue of the Tenes Apollon,—found at the foot of the Acrocorinthus,—interesting chiefly as showing an early progressive step in the development of the sculptor's art from the Egyptian stiffness to the further stage to be seen in the Æginetan marbles; the magnificent statue of the Sleeping or Barbarini Faun, a noble and realistic work of antiquity; among the few Egyptian sculptures, a sitting figure of rare beauty,—these, with a few scattered works, none surpassing mediocrity, form the collection of the "Glyptothek," the world-wide fame of which rests, and justly, on its possession of the Æginetan marbles.

Apart from the great archaeological and artistic value of these works, an interest more than ordinary will always appeal to the English visitor in the facts connected with their discovery.

\* The Glyptothek, the first great building erected by King Louis, is the work of his architect, Klenze (1818); it is a Greek edifice in the Ionic style. Round the exterior are a number of niches containing the statues of the great sculptors of antiquity and modern times; in one of the niches on the eastern side, between the years 1857 and 1859, was placed, in company with the statues of Canova, of Thorwaldsen, Rauch, Tenerani, and Schwanthaler, a classically-draped statue of John Gibson (by Brugger). No one can begrudge Gibson his niche on the exterior of the Glyptothek, standing beside Schwanthaler; but we should like to see, in the sumptuous halls within, a bust, at least, of Charles Robert Cockerell, who did so much, not only for his own art, but in adding to the lustre of the capital of Bavaria by his connexion with the Æginetan marbles.

The story has been told before of Prof. Cockerell's share in the unearthing of these treasures, lost by ill-fortune to England. We can imagine what interest an architect, with sympathies as strong as Cockerell entertained for the sister arts, must have felt at his enthusiastic age on first beholding the fragments discovered at Ægina, and how immediately he must have seen with his brother savants the interesting link that now, we well understand, had thus been so unexpectedly come upon. The interest aroused at the time by the discovery in 1811 of these figures can be understood when it is remembered that they were the first works brought to light belonging to the school of Ægina, the existence of which had long been known to scholars through the classic writers. Great was the dismay caused when these works were seen to bear the peculiar character which till then had been attributed by archaeologists to the works of the Etruscans; the long-suspected but generally-accepted Italian theory of the Etruscan origin of art received its death-blow, and archaeology made one of its greatest advances on the road to a knowledge of the development of antique art.

The sculptures discovered at Ægina were seen to be the creations of the school which, itself derived from earlier sources, had led to the scarcely later perfection of Phidias. It is this feature alone which would give to these treasures an interest more than ordinary; but their artistic merit is scarcely less remarkable; their beauty, their grace, their life-like energy of action, the executive skill of the sculptor, make them almost equal to the Parthenaic marbles themselves. Each of the figures lives, their actions studied by an artist who is no mere copier of his predecessor's models, who, while we see him still strongly under the influence of their teachings and traditions, has reasoned, has compared, and has advanced by a great stride the development of his noble art towards its highest perfection.

Strange destiny that led Ægina, lying on the island-broken horizon line of Athens,\* to produce such a strongly-marked art, the creations of which belonged to one of the two great differing and antagonistic elements which Hellenic art and civilisation displayed. Attica, the home of the Ionic race, takes in Athens, with its elegance, its important place; but to the Dorians Greece is indebted for the part they played. It was a sturdy element that the athletic Dorians introduced into their art; while the Dorians it was, we must ever remember, who first gave life to bronze, and under the magic hands of whose sculptors the placid marble first started into almost breathing existence. Under these two influences Greek art developed

\* In an exquisite sketch by Cockerell, which forms the frontispiece to his work on the Temple of Jupiter Panhellenius, we have an interesting view of Ægina from the land; the Archipelago and the Islands on the horizon, Mount Hymettus on the right; far out to the west, Treseus, Epidaurus, Mount Arachneus; the centre occupied by Athens, the Acropolis, the Pireus, the Long Walls, the Grove of Academe, the classic eminence of Colonus, and the shores of "unconquered Salamis."

into its perfection. In architecture they were represented, one by the manly Doric, the other by the graceful Ionic, and the same difference we trace in their sculpture.

Though at Corinth, at Sparta, at Argos, and at Sicyon, the Dorians show us flourishing schools, it is in Ægina, the most famous of the Grecian islands, that we find the highest development of the Dorian art teachings. From an early period an enviable artistic reputation had been gained by the inhabitants of the island so long the rival of Athens, not alone in commerce and in art, but in deeds of prowess, "the eyesore of the Piræus," as Pericles termed Ægina, which in the clear summer days shone out bright on the sharp line of the blue Mediterranean, and over which in unsettled weather hung threateningly the clouds. For centuries the Æginetans retained their renown as skilful artists, and their little island, barely twenty-two miles in circumference, they embellished with numerous public buildings and magnificent temples. Of all these the most famous was the temple of Jupiter, or Zeus Panhellenius, the ruins of which lie on the north-eastern portion of the island, situated conspicuously, as was the custom in classic times, on a broad platform. It was the pediment of this temple that the figures known as the Æginetan marbles decorated, and it was in the course of a visit made in 1811 by a number of architects to the island, with a view to taking the measurements of the interesting temple, that the sculptures were accidentally discovered. Professor Cockerell, in his invaluable work on the temple,\* has told us, with a graphic and artistic grace and in a romantic style one would little expect to meet with, the incidents of the expedition.

It was an interesting party of artists and men of letters gathered at Athens in the autumn of 1810, and among whom the visit to Ægina was arranged. After a midnight farewell to Lord Byron, about to return home to reap his harvest of laurels, the party, composed of Cockerell, of Mr. Foster, an architect from Liverpool, of Baron Haller, the architect of the King of Bavaria, and several other Germans, set off. The measurements of the temple were being rapidly progressed with, when the unexpected discovery, at but a few inches below the surface, of a fragment of a sculptured figure in Parian marble suddenly awakened, as Cockerell himself says, a new interest. Seventeen figures were eventually unearthed from their quiet rest

\* The Temples of Jupiter Panhellenius and Apollo Epicurus. London, 1860, in folio; numerous plates. Late as was the appearance of this volume, it is indeed fortunate that the occupations of an arduous profession did not entirely prevent, as they had so long delayed, the publication of this work before the last survivor of the interesting party which had visited Ægina in 1810 had passed away. The temple was visited some ten years later by Professor Donaldson, whose learned observations and generous assistance his friend Cockerell gratefully acknowledges in the pages of his work. Only a few days ago we heard our excellent friend the Professor express, with all his old enthusiasm, the hope that the asserted recent discovery of a statue of Minerva in Athens might be true. "I believe in it," he said, "because I wish it."

of fifteen, perhaps twenty, centuries. Such is the simple account of the discovery of these treasures. How they failed to fall into our hands, Professor Cockerell endeavours at some length to explain, and a certain cold comfort is to be obtained from the explanation, the more so as the blame that the public are so apt to attribute to "the authorities" is, in this case, not so deserved as it has been in several other instances more familiar that have come up since those days.

It appears that the sculptures, after the difficulties had been overcome by the means usual with Turkish officials, were taken in fragments, as they had been found, to Zante. During this time both the English and German discoverers were endeavouring to induce their respective Governments to purchase the treasures, but, difficulties arising, it was agreed to advertise, in the *Gazette* of every country in Europe, the sale of the marbles. The sale was to take place at Zante. England, having determined to acquire the treasures, immediately sent out a brig-of-war. It being feared that the French might seize Zante, the marbles were removed to Malta; thither Mr. Taylor Combe, keeper of the antiques, was sent with orders to purchase the treasures, it being naturally believed that their sale would take place in Malta, but the sale had been held at Zante, and through this unaccountable misunderstanding,—which the telegraph of to-day would have prevented,—Prince Louis of Bavaria was able to purchase, at a sum considerably less than what we had determined to pay, those priceless relics. It must ever remain a source of deep regret, notwithstanding that they repose in such worthy hands, that we were thus prevented from possessing the *Æginetan* marbles, which in company with the so-called *Elgin* marbles, would have rendered our British Museum even more worthy than at present to be considered the choicest collection in the world of specimens of antique art. In the present day, however, at Munich these works are almost as accessible for purposes of study as on the banks of the Thames.

After all that the Germans have written concerning these interesting fragments, it is not our intention to enter into any one of the many vexed questions they innocently have raised; suffice it to say that the figures are those of warriors engaged in a Homeric struggle, the representation of which was a favourite artistic "motive" of the Greeks. Equally needless at this date, and in an article such as this, to enter into any lengthy details regarding actions of the interesting figures which compose the two groups of the pediments as they are arranged in the Munich Museum. A peculiar interest is attached to these lifelike works, in which is still evident so much of the archaic treatment of the earlier schools; in one case, in the carefully-dressed hair, but chiefly in the traditional and unmeaning smile on the faces even of the warriors warmest in action, the existence of which we can now, since the discovery of the Cyprian antiquities, trace back to Asia, and the evident origin of which may be explained by the desire of the artist to impress a life on his creations; but this smile in these warriors is not the exasperating simper of the Cyprian works,—it is a smile which, were it not on the face of the wounded and unwounded alike, we would almost excuse. It is impossible, however, to agree with so distinguished a critic as M. Vitet, when, in speaking of these works in comparison with the marbles of Eleusis, he refers to "these hideous heads, these faces without life, without intelligence, immovable, grimacing, stupid, physiognomies almost bestial, which seem the work of an art half-perilous, half-barbarous." Even hasty inspection will reveal none of these defects in the work of the unknown artist who wrought so lovingly on these living, moving warriors, watched over by the hieratically stiff and quaint Minerva, for whose archaism we, at least, have ample reason. A striking similarity, it must be admitted, will be found in these figures, but it is a similarity that would seem to arise from seeing the same human being in different attitudes, each minutely studied in its muscular development.

Here lies one of the chief features of the Dorian art. The *Æginetans*, famed as skillful navigators and widely-patronised artists, were no less successful in the great games, and their reputation they zealously kept alive by the severe training of the gymnasium; here it was that the artists studied the human form; here opportunities were afforded for this study which alone the life of Greece could give the observant

artist. Herein lies the difficulty, the impossibility, of modern artists even hoping to rival in this direction their classic predecessors.

Professor Cockerell, in his valuable work, devoted not alone to the consideration of these examples of sculpture, but to a serious and learned discussion of Greek architecture, suggested by the study of the temple of Jupiter Panhellenius, has told us a great deal concerning these relics. That the figures were coloured is no longer a matter of doubt, as also that the temple itself was gaily ornamented,—a fact proved alone by the discovery of many fragments on which were found at the moment the colours in all their vividness, but which, on exposure, soon disappeared. The shields when found showed traces of having been painted red inside; the lips and pupils of the eyes seem also to have been slightly coloured; the ornaments were in bronze, the holes corroded with green still showing their original position; all the swords and spears were of bronze; the rest of the temple was also highly decorated in polychrome, of the scheme of which Professor Cockerell gives us a number of careful studies. Strongly universally admitted that the Greek architects' brilliancy of a climate like that of Greece, which would render the white marble edifices not a little spectral to the eye; the large amount of time spent out of doors by the Greek, and his consequent desire to find there the decorative home surroundings; the small size of the architectural features, particularly in such a case as the Temple of Mount Panhellenius, requiring the aid of colour to heighten the minute details, may be adduced as some of the many reasons brought forward to explain the use of colour in the architecture of antiquity: that in the sculptural decoration of his coloured work the architect should require the same regard to effect, is only natural.

Coming from an artist like Cockerell,—a "lover," as he calls himself, and an "eyewitness" of the discovery of these invaluable treasures,—is it not sad to find that he has many complaints to make of the restoration of the figures of the pediment of the Panhellenian temple? Thorwaldsen, it will be remembered, was entrusted with the task of their restoration, but in spite of the renown of the great sculptor, Cockerell does not hesitate to express his dissatisfaction with the work of the Danish artist. Cockerell's connexion with the marbles entitles him certainly to an opinion, "present," as he was, as he himself states, "at every operation, watching with zealous and delighted attention every stroke of the excavations, and noting down each successive revelation with line, rule, and compass." He had the advantage of making careful drawings of all the figures, in company with his friends, in 1811, and later on, of "drawing every piece a second time, while under the care and restoration of Wagner and Thorwaldsen, at Rome, five years later." The attitudes in the course of the restoration have been "possibly" (Cockerell modestly puts it) "disguised; heads, helmets, and limbs have been supplied without sufficient authority," such "arbitrary assumptions," we must agree in congratulating ourselves, have never been allowed with our Hellenic treasures.

Of the grouping, again, Cockerell complains; he contends that, in each pediment, there must have been at least thirteen figures, not ten, as the existing arrangement of one pediment would lead the spectator to suppose,† and this view is amply supported by the grouping suggested by Cockerell himself, in a careful series of drawings. Fragments of no less than thirty distinct figures were found on the spot at the time of the discovery; this, at least, would warrant the supposition of the larger number. Surely, too, it must be regretted that the model of the temple, which is perched high against the wall above the grouped figures of the pediments, is far from obtaining the approbation of Cockerell; his careful studies and their satisfactory results,—adopted unhesitatingly by the French archaeologists,—are in this coarsely-coloured German model entirely put aside.

\* Cockerell draws attention to the fact of the costume, or, rather, armour, of these warriors being archaic, and considered by the artist: the armour is that supposed to have been worn in the days of the great Trojan struggle. † In this pediment the restoration group ten figures, in the other only four; the fragments which are arranged on a shelf close at hand, are by no means the least interesting portion of the whole; the beauty of some of the less injured pieces is exceptional. An interesting feature is afforded in the acroteria of one of the pediments.

After learning this fact it can be imagined with what diminished interest the visitor looks on this otherwise instructive feature.

But in spite of our knowledge of their blemishes, the *Æginetan* marbles cannot lose the peculiar value which is attached to them,—that of being the creations of the artist which preceded the glories of Phidias.\* It is not difficult, with these works before one showing such intimate acquaintance with human anatomy and proportion, such study of human action, to understand the advent of an artist like the creator of the Parthenon marbles. In his hands the still remaining quaintnesses were to disappear, and while the master was to profit by the learning and the study shown in his predecessor's work, he was to stamp his own creations with all the ideal divinity, the sentiment of breathing existence and expression, the characteristic generalisation of details, the "style," in a word, which marks the perfection of his work. Athenian by blood, Phidias by education is a Dorian, and in him were to be blended the traditions of the two prolific schools; form and conception were at length to be united,—the religious aspirations of Attica with the realistic sturdy expressions of the Dorian schools. While we can never bestow too profound an admiration on the great Athenian, we see by these *Æginetan* marbles that in the development of his art he takes his due place, not rising as if by a freak of Providence, but the predestined genius whose deep study was to profit by the lessons and the efforts of generations of less fortunate predecessors. This is the chief interest that surrounds the marbles now at Munich, an interest which, notwithstanding their exile from their home, it is impossible not to feel, in spite of their being deprived of those surroundings for which they were originally designed. Placed as they are, alone, unrelieved, amidst the architecture in which their marked characteristics shone out with even greater force, unframed in the deep low tympanum in which each change of light and shade added a fresh charm and life to the composition,† it is, indeed, difficult to thoroughly understand, still less to picture, these marvellous works of a land so different to our gloomy North. In that bright, clear Southern atmosphere, where the deep, cool, transparent shadows mark boldly every form; where the blue of the island-dotted sea, the dazzling haziness of the classic mountain line, arouse the recollection of the long-past glorious days sung by the poet, there one can realise the perfection of the art of Greece,—an art we can never hope to surpass.

**The Rowland Hill Memorial.**—Fourteen models for the Rowland Hill Memorial are now on view at the Mansion House, pending the final decision of the committee of selection. Nine are in a standing position, and the remainder sitting. We have received no invitation to see them. At a meeting of the committee, the sub-committee reported they were strongly and unanimously of opinion that the statue should be an erect and not a sitting figure. Sir Frederick Leighton had, on the invitation of the committee, placed his services at their disposal in the selection of the best work of art, and had suggested that the committee should also ask two senior sculptor members of the Royal Academy to act with him, and that their award should be final. The committee proposed, therefore, to invite Mr. Calder Marshall, R.A., and Mr. Woolner, R.A., to join Sir Frederick Leighton as umpires, and they proposed, on receiving the final award, to make the necessary preparations with the successful artist for the erection of the statue, in accordance with the conditions laid down. These proposals were agreed to.

\* Much as we are all indebted to the representations of ancient art by the photograph, for accurate purposes of comparison it is difficult to form a correct idea of the *Æginetan* marbles from photography; the *Elgin* marbles, from their subdued colour, the result of their long residence in Bloomsbury, suffer less when represented by the photograph, but the *Æginetan* marbles, which have resided for the last half-century and more in a clear climate like that of Munich, have retained all the brilliancy so familiar to travellers in the East, who find so great a difference in the colour of Northern sculpture and architecture.

† The depth of the tympanum beyond the place of the entablature shown in one of Cockerell's drawings is well calculated to lead to the employment of entire statues instead of reliefs, commonly used in Roman and modern works of this description. This interesting practice of the Greeks was first made known to the learned of Europe by the transport of the marbles of the Parthenon to England; even the restorations given us by Stuart (in the last century) were left to suppose that these compositions were in relief only, and scarcely had this fact been appreciated when the marbles of *Ægina* were brought to light in confirmation of this view.



although apt to be obscured by the story, of "the Fight of Faith with the Evil Spirit." Under this view, and as it furnishes the popular portrait of the received dragon of our dispensation and legendary lore, a sentence from the reprint from the black-letter edition of the "Seven Champions of Christendom," of the time of James I., may be welcome. "St George," who is engaged in the adventure of saving the fair Sabra from the voracious monster, "like a bold and daring hero, then entered the valley where the dragon had his abode, who no sooner had sight of him but his leathern throat sent forth a sound more terrible than thunder. The size of this fell dragon was fearful to behold: for from his shoulders to his tail the length was 50 ft. The glittering scales upon his body were as bright as silver, but harder than brass, and his belly was of gold, and larger than a tun." Notwithstanding, however, his armour and his vast proportions, our Christian knight, of course, overcomes him, cuts off his head, and preserves the royal maiden.

Although this dragon destroyed by our patron saint may be considered as the popular typical dragon of our Christian dispensation, he varies but little from the Classic examples in the heathen mythology, as, for instance, from the one who guarded the golden fruit in the Garden of the Hesperides, and that other who had charge of the golden fleece, and was done to death by Jason. All more or less are great crocodiles with wings. Although they are like this reptile, however, they do not appear in Egyptian art, but may have come originally from China, through India, unless, indeed, they were independently imagined by most nations, as is very likely. They appear, at any rate, early over a wide extent of the globe, as on the old Grecian shields, and the ancient armorial bearings and legends of the Northmen, and also in the Nibelungen Lied, in which the Achilles of the poem, Siegfried the Invulnerable, kills a dragon at Worms.

China and Japan, however, seem to have long been, even in remote ages, the headquarters of the dragon; and in China especially he appears to hold the position of a god rather than of a demon. There is a "beauty of holiness" which may be said to be represented by the angel, and on the other hand there may be almost said to be a beauty of ugliness, according to the perverted estimation of the Chinese for the dragon and other monsters, for which they cherish the most ardent admiration, which we only bestow on the beautiful. For the chief enhancements in painting and sculpture on our buildings we love to adopt pleasing images; while they, on the other hand, seek them in what is horrible, and even for the figure-heads of their vessels they have recourse to some frightful representation, which they acknowledge is devised with a view of terrifying their enemies.

Until we became fully acquainted with the powers of the Chinese and Japanese in this department of terrific art, we might have conceived some of our old Gothic artists as super-eminent in that line; but, according to our present knowledge, they must hide their diminished heads, and bow to the extreme Oriental. In the dragon, for instance, nothing that the West has produced can vie with the villainous aspect of some of the Japanese bronze dragons, who, with concentrated rage, which is intensified terror, appear to grasp the handles and bodies and tops of their vases with a fury almost supernatural. We may, however, be well reconciled to compound with their excelling us in this department of art, as they make no pretence to emulating us in the representation of angels, or of the beautiful among the human race.

The dragon is certainly not, *per se*, a subject that we should desire to expend a large portion of our time or art in representing, unless in as far as it may serve as a contrast to the angel and other beneficent beings, and as a shadow relieving and emphasising their brightness. In this aspect, however, in accordance with the teachings of our Church, it may well, at least occasionally, be introduced in the decorative portions of our sacred edifices, although, of course, in subordinate situations. As good is, in degree, founded on the suppression of evil, a column may, aesthetically, well rest on the representation of a vanquished dragon; although this creature may not so appropriately appear on its capital, except, perhaps, in a crypt. Angels, on the other hand, may suitably occupy

spandrels, both in respect to æsthetic sentiment and as also that, either seated or erect, with their feet together, and their wings spread, their figures are readily adjusted in such situations.

In an ecclesiastical edifice, in which the central culminating form of a dome, itself a symbol of the arch of Heaven, will ever remain the most dignified and glorious feature, while the lower walls of its nave, aisles, and chapels suitably receive subjects illustrative of the history of the Church on earth, the dome itself may be especially reserved for the representation of the Heavenly Host; saints and angels in glory, a holy inspiration of praise and thanksgiving lifting the soul from earth to heaven, as when, in the words of Job, "The morning stars sang together, and all the sons of God shouted for joy."

As may be recognised, our space has only permitted a short and cursory view of some points of this subject, which might, nevertheless, in able and worthy hands, yield abundant materials for a literary and artistic work of great interest, not only to the *virtuoso*, but to the general reader.

#### THE BURLINGTON HOUSE LOAN EXHIBITION.

"The cry is still, they come!" and there is no evidence as yet of any falling short in the supply of works by old masters to keep up these interesting and valuable exhibitions, or any necessity for turning back to the re-exhibition of works previously lent here. The twelfth exhibition is full of fine and interesting works, and inferior to none, except those of the first year or two, when the field was entirely fresh.

The practice which the Royal Academy have observed during the last two or three years, of adding to the collection of pictures a collection of drawings or some other subsidiary works of art, presenting artistic or historical interest of a different kind from that represented by large finished paintings, has been provided for this year by the loan from University College of the large and interesting collection of studies by Flaxman in their possession. This collection was open to the inspection, at University College, of any one who asked to see it; but it was not, of course, the subject of any advertising or other public manner of recommending it to attention, and consequently it was practically known to but a few persons. It was partly on this account that some time ago we devoted a long leading-article to a description of the contents of the collection, and to some remarks on the genius of Flaxman, to which we may be allowed to refer the reader. We are very glad to see such a collection of drawings of so great and noble a genius brought from the semi-privacy of their usual place of keeping and arranged so as to afford every facility for their complete inspection by those who can understand, or can learn to understand, the beauty and significance of these small drawings. We hope visitors to the rooms will give them due attention and study. The lack of any adequate appreciation of the genius of Flaxman, even among people who profess great interest in art, is really deplorable, and it is not creditable to the boasted art-culture of the day that English people should require to have it explained to them by great artists that their country possessed in Flaxman, "That this is so is partly to be explained, perhaps, by the fact that there has been a great reaction in favour of colour in this country, and the fashion of dilettantism is turning a great deal towards the style of highly-coloured decorative art which is so largely illustrated at the Grosvenor Gallery. Flaxman's designs in drawing were the designs of a sculptor with whom form was the most important element, and who, in fact, never meddled with colour at all; the best of them are purely outline, without even the modelling or relief of shading, and they are small in scale and often very slightly sketched. It appears to us, however, that these very characteristics make the exhibition of these studies peculiarly valuable at present. At a time when so much is made of mere manipulation in art, and when the true spirit of classic art, its strength tempered by refinement, is so much lost sight of in the pursuit of a kind of sentimental imitation of classic art, graceful but melancholy and effeminate, it ought to be good for people to look at drawings which show how a grand style can be illustrated on a small scale

and with the simplest means,—how figures and groups can be designed in a spirit that is graceful and yet manly and robust,—how poetry and sentiment may be conveyed through the human figure without ignoring or falling short in power and correctness of drawing. In the productions of one school of painters of the day we have recently seen, and are in process of seeing, that the highest profession of poetic sentiment and intent, the most elaborate finish of accessories, will not atone for a weak and mannered style of drawing, for affected archaism, for the mannered repetition of figures of a similar and very overrated type. Flaxman seems to remind us how, in the highest class of art, it is the idea and the power of expressing it which make the real value of the work, not the elaboration of finish; to show us that grandeur does not consist in mere size, but that an outline-figure 2 in. or 3 in. high may be grand, or pathetic, or lovely, in the highest degree, if looked at by well-taught eyes. For art such as that of Flaxman demands something from the spectator. It is the very last kind of production to appeal to vulgar or uneducated eyes. His outline designs to Homer and Hesiod, *Æschylus* and Dante (the studies for many of which are here), represent just what is essential to the expression of the figures and the telling of the story; what is essential, but nothing more. They are like abstract ideas of the men and women, the mortals and immortals, created by the poets. So purely ideal is the manner in which they are presented that we never feel our faith in them disturbed by any collision with the more prosaic-view of the possibilities of the situation. The strength and manliness of Achilles, the beauty of Venus, the majestic youth of the Sausage-rending in his horses, are outlined to us in a way that defines with the utmost clearness the artist's idea, and yet leaves our fancy free to play round it in our own way. The beauty and power of the drawing and foreshortening in these works should be compared with the works of Blake, the friend and admirer of Flaxman. Blake had a far wilder imagination than Flaxman, but he was never certain of his drawing; and the rather excited estimate of Blake's genius which has been formed of late years, stimulated by some very enthusiastic critics, has done some injury by leading people to overlook or make light of the great and sometimes absurd defects of Blake's drawing, in admiration of his undoubtedly remarkable flights of imagination. He meant more wonderful things than Flaxman ever imagined, but he could not express them articulately. In the study of Flaxman's designs we see works in which the hand was always able to show what the brain conceived, and in which imagination never outsteps the modesty of nature. Flaxman has a few little mannerisms, but they are not very prominent; the most marked one is a liking for a peculiar way of grouping together receding figures so as to make them appear to move off with one continuous motion; but even this does not occur very often, and on the whole his designs, though with an unmistakable style stamped upon them, are wonderfully free from mannerism. We may observe that in addition to the drawings now lent, University College is also in possession of a large number of casts and models by Flaxman, and we hope that in a future loan exhibition the college may be induced to lend these also as a further means of bringing Flaxman's art more prominently under the notice of the public of the present day, or find some means of leading the public to go to Gower-street.

The paintings exhibited fill four of the galleries. One of the most noteworthy paintings in the first room is Mr. Louis Huth's splendid Hogarth, "The Lady's Last Stake," originally exhibited under the title "Piquet; or Virtue in Danger," representing a scene where a young married lady, who has lost all her money and jewels to an officer over the card-table, is offered the return of the whole at the price of her honour. The picture has been very well taken care of, and thus gives an idea of greater brilliancy of execution than in many other works of the artist; the accessories and furniture are painted with the most minute and admirable realism, the two figures are most expressive in their action and demeanour, without the least exaggeration. The lady, who is one of Hogarth's beautiful women, in that style of fine and rather civilised and naive beauty which he could express so well, sits with her chair turned away from the card-table, half turning her back on the addresses of her companion, and striving to be outwardly composed.

Hogarth has given, in his peculiar way, additional point to the scene by the clock on the chimney-piece with the figure of Time and the word "Nunc" engraved underneath; now is the moment on which the making or marring of a life turns. It is a most impressive work, and all the more so from its perfectly real character,—that of a drawing-room tragedy in actual life, with no mock-heros about it.

Among the interesting works in the same room is George Morland's series, somewhat *à la* Hogarth, of the progress of a certain "Lettitia" from innocence to sin, and her final repentance and reconciliation with her parents. In this case, too, it is "an officer" who is the agent of temptation; the army seem by common consent at that time to have been regarded by painters as being chiefly employed in seduction. The series does not represent Morland's best characteristics as a painter, and is valuable chiefly as a curiosity. There is, however, something fine and characteristic in the style of the old farmer, the father of Lettitia, evidently a study from life; and the scene where Lettitia is dressing for a masquerade, to divert her thoughts, and her lover looking on admiringly, is good. Among the portraits of this room one of the most interesting is that of Miss Tyler, by Gainsborough, one of the works which illustrate Gainsborough's power of representing liveliness and sprightly character in a female portrait,—a power in which he was superior to Reynolds, perhaps. Miss Tyler is a seated profile figure, leaning back with her head on her hand, with a thin, eager, expressive face. The best pendant to this portrait in the room is Reynolds's beautifully tender and delicate painting of Lady Carysfort; the painting has faded a good deal in colour, unfortunately. Callcott's large painting, "Calam on the Medway," lent by the Earl of Durham, is very welcome; Callcott's really noble qualities as a painter of sea-pieces of this class have been allowed to be far too much forgotten and underrated. He does not achieve realism in his seas, certainly, but he gives the broad, calm repose of an expanse of still water, and ships floating on it, with true feeling for the poetry of the subject. Another remarkable landscape painting is Lord Wilbourn's small Crome, one of those works, perhaps, which it is recorded that Crome would obligingly send to fill up a space in an exhibition. The subject is, as prosaically registered in the catalogue, "Sandy bank, with patches of furze and a clump of trees on the top; distant o'oady sky"; but out of this Crome makes a little poem, a harmonious and complete whole. The small painting of a dead hare by James Ward, lent by Mr. E. M. Ward, should not be overlooked; it is a masterpiece in its way. There are two paintings in this room possessing a definite historical interest, and one by Frank Hayman, of a cricket match on the old ground of the Marylebone Club, now part of Regent's Park, the players in short breeches and stockings, the umpires in cocked hats, the bats of an obsolete shape, slightly curved at the end; we shrewdly suspect, however, that the painter made a mistake in his representation of the manner of using the bat; we have little doubt that the ball must have been hit with the convex and not with the concave side of the bat, as he shows a man preparing to strike. The other work we referred to is Gainsborough's painting of the House of Commons in his day, and Fox addressing the House. Gainsborough painted an exquisite picture of the ladies of his day "Walking in the Mall," which was shown here at a previous loan exhibition; this work may be considered to aim at the same kind of interest, but the painter has not been so successful; it is a subject in which there was no beauty, it must depend for its interest on character, and this he has failed to impart, the members seem only so many heads with wigs on them. Fox is a portentous figure, as broad as he is high, in blue coat, and with an immense expanse of waistcoat spreading like a sail in front. Certainly if a man had the misfortune to be corpulent, the costume of that day was calculated to bring out the fact fully. In the same room a portrait by Hoppner of the Countess Carysfort should be noticed, and Opie's portrait of his mother, and Romney's of Mr. Thomas Grove, of Wiltshire, remarkable for the bright, alert expression and the fine painting of the face. Reynolds's "Nymph with Pan piping to her," is one of the more favourable examples of his nude studies as far as the figure is concerned, but there is a conventional simper about the face which puts to flight any "wood-nymph" association.

Gallery No. II., as usual at the loan exhibitions, contains the contributions belonging to the Dutch school, of which there are some exceptionally fine specimens. Of these, one of the most remarkable is Mrs. Hope's Jan Steen,—a large interior scene, entitled in the catalogue "A Lady offering Wine to a Gentleman," but which is a scene showing several figures grouped in a large room. Nothing could exceed the brilliancy and reality with which everything is rendered, from the gestures and attitudes of the figures to the smallest detail. A most characteristic figure is that of the man in a red hat, standing with his back to the fireplace, and looking round to the right: we should take him to be the master of the house; his look has a consciousness of mastery, coupled with a somewhat indolent indifference to what is going on. On the left Jan Steen leads our eye away from the comfortable group enjoying themselves in the dining-room, across a further room, through the window of which is seen a beautiful bit of evening sky. There almost seems to have been some kind of moral in the mind of the artist, for the chimney-piece bears a figure of Fortune, with an inscription, translated in the catalogue, "Lightly come, lightly go," somewhat after the manner of Hogarth. Anyhow it is a remarkable and most impressive picture, and seems all the more remarkable on comparing it with the painter's obviously frank portrait of himself and his wife, belonging to Mr. C. Butler. Was this really the painter of the work we have just been looking at?—this coarse boozey-looking man, full and heavy in the face, sitting with shut eyes and protruding under-lip, indulging in a smoke after dinner? A more vulgarly sensual and repelling figure it would be difficult to imagine, and the frankness of the representation makes it the more extraordinary. One thinks of the question asked about M. Parolles, when his soliloquy was overheard, "Is it possible he should know what he is, and be that he is?" Jan Steen's wife sits beside him, having evidently also had a very good dinner, and fallen into a doze, with her elbows on the table. Two children are blowing bubbles, and endeavouring to attract the attention of their parents to their achievements. No one can be surprised, after this portrait, at the coarse taste of many of Jan Steen's paintings. The wonder is that he should ever have risen above this, so far as to paint the other picture above described.

Earl Cowper's Teniers, "The Worship of Bacchus," is a specimen of one of those rather extended out-door scenes of which Teniers painted a few, one or two of which have been in previous loan exhibitions. Teniers does not show to the best advantage in this class of works; his landscapes are colourless and dirty-looking, and his groups of figures are scattered about in rather an unconnected manner. This one is clumsy in conception, too, from being half realism and half allegory; the two coopers working at barrels, on the realistic side, are the best figures in the picture. Mr. Angerstein's Vandyck, "Nymphs and Satyrs," is interesting as a specimen of Vandyck in an unusual class of subject, and the "nymph" on the right is a very fine nude study in regard to drawing and modelling. The large Vandyck portrait group of the Wentworth family is hardly a remarkable specimen of the artist. There is a splendid Gerard Dow, also contributed by Mrs. Hope, and a companion to one in the National Gallery. The two or three specimens of De Hooche will also recall a well-known one in the National Gallery; they represent in at least one case the same scene and nearly the same personages, rather differently arranged. A Teniers interior, lent by Mr. Howard-Keeling, shows Teniers at his best, with splendid painting of what may be termed kitchen *bric-à-brac*. Terburg may be studied in two very fine, though obviously contrasted, pictures, the "Portrait of a Burgomaster," lent by Sir William Abdy, and the interior with soldiers and a trumpeter, lent by Mrs. Hope. The latter is fine in colour, the former a literally almost entirely colourless painting, the face of the portrait alone standing out from a dark background and above a dark dress; it may have looked clearer once than it does now; at present it seems a realistic portrait, somewhat ineffective as a picture. There are other works by Metzua, Maas, &c., very fine specimens of the respective painters; and the powerful sketch by Velasquez, "A Flute-player," should be noticed.

The large gallery contains a very varied collection. Earl Cowper's large Vandyck, the portraits of the Count of Nassau and family,

occupies the top of the room, and is effectively contrasted with Reynolds's picture of the children of the first Viscount Melbourne. The Vandyck is all stateliness, almost stiffness, of demeanour in the figures; the Reynolds all grace and nature. Cotes's work of a similar class, the portraits of the daughters of Frederick Prince of Wales, lent by the Queen, is a good picture, and holds its place very respectably by the side of the great names in its neighbourhood. Earl Cowper's two Raffaels, small Madonnas, belong to a class of Raffaele paintings, which would not in themselves by any means explain the great place of the painter in the rolls of fame; they are graceful and pretty, but no more. The care with which the landscape and the distant building are painted in the first example (No. 143) may be remarked. There is a curious Parmigiano, "Portrait of a Virtuoso," in regard to which we beg to point out that the sculpture behind the figure is not a "bas-relief" as described in the catalogue, but an alto-relief, the nearest figure being, in fact, almost entirely detached from the ground. There should not be inaccuracies of this kind in a catalogue got up under the supervision of the Royal Academy. Paolo Veronese's "Venus and Mars" is a highly characteristic specimen of the painter; Mars being, of course, a Venetian "Signor," and Venus one of those large blonde women who seem to have been a characteristic product of the Italian Renaissance. The Andrea del Sarto, said to be a portrait of himself, is a very beautiful and refined painting, but we should share the doubt that has been expressed as to its being his own portrait; it does not look like the portrait of an artist. The two next important pictures in subject and composition on this side of the room are the Earl of Strafford's Titian ("Holy Family") and the Marquis of Ailesbury's Murillo ("Marriage at Cana in Galilee"). This latter is a good specimen of Murillo, his powers and his shortcomings; it is capably painted in every sense, even to the jars in the foreground, and yet leaves the spectator impressed with the cleverness of the painter rather than with any higher feeling. The Titian is a grand work sadly cracked and faded, but still impressive in that peculiarly Titianic way which almost defies analysis; figures and landscape are blent in a rich, warm light; the landscape unusually fine, and the head of Zacharias on the right is grand.

At the end of the room the most noticeable work is Rembrandt's effective but ugly figure of a man, half-length, leaning forward to take his hat from where it is hanging. In expression and general effect this contains some of the best qualities of Rembrandt's painting, more so than his big equestrian figure of Turenne, which is rather commonplace, and, moreover, the horse is clumsy in action. Nicolas Poussin's "St. John at Patmos" is a fine, though oddly-painted landscape, with two small figures, looking the odder by contrast with the Claude near it, though the latter is hardly a first-class Claude. But turning to the fourth side of the room we come to the climax of the collection. In the matter of landscape there are, to begin with, a couple of Turners which soon make one forget Claude and Poussin. The first is a rather late one, "Kilgarran Castle," lent by Mr. Bischoffheim; the other, Lord de Tabley's view of the lake at Tabley. Look at the solemn grandeur of the one, the deep reflections and rich tones of the water, the glint of distant light over the top of the rocks,—and then turn to the bright breezy freshness of the "Tabley Park," as distinct in tone and effect and manner as if another man had painted it. There is no more marked indication of the greatness and independence of Turner's genius than this variety of style and feeling, as compared with the Claudes and Poussins, who, with all their noble qualities, painted all their pictures alike. Then for the other contents of this wall of the gallery: here be portraits, indeed! There could not be a finer or more effective contrast than that furnished by Romney's "Mrs. Bankes" and Gainsborough's "Lady Ligonier," which are hung as pendants. Mrs. Bankes is almost a young girl, with the freshness and *naïveté* of youth still on her; in simple white dress, draped so as to indicate the figure a little, she leans looking upwards, with her elbow on a column draped with crimson, an embodiment of health, beauty, and simplicity. She is a blonde. "Lady Ligonier" is a brunette, an older woman, a woman of the world, with a face not handsome so much as expressive, and a piercing dark eye; she also leans on a pedestal, but is clothed in rich satin

with a many-coloured scarf depending from the waist. The painting is much more finished and much richer in colour in every way than the Romney; but in this case the two styles of execution seem exactly to suit the respective subjects. Reynolds has his triumph a few steps further on, in his painting of Colonel Alcock and Lord Sydney shooting red deer, lent by the Earl of Carnarvon. This shows the full-length figure of two very fine young men in profile, and with most effective grouping and arrangement of colour; the combined action of the two reminds us a little of the harmony of action in some of the Parthenon frieze figures; the arrangement in regard to lighting and colour shows a carefully and effectively designed contrast. The darker figure, with short hair and aquiline features, is kept rather in the shade, the head relieved against dark foliage; the other head, with light hair blown out by the breeze and more *spirituelle* features, is placed in the centre of a space of bright sky seen through the foliage. The effect is splendid; it is one of the finest works of Reynolds, and shows how he could make a really poetical picture, which impresses one like an ideal work, out of an order for the combined portrait of two young men who wished to be painted together as friends.\* On the same wall is Wilkie's large and powerful portrait of the Earl of Kellie, lent by the Fife Court House Commissioners, containing also a large dog, painted *con amore* and with telling success. Romney's "Lord Ligonier" is also a fine and very interesting portrait, though it is thrown into a comparatively secondary place by the others we have named. Gainsborough's well-known painting formerly called "Cottage Children," but here exhibited as the "Wood Gatherers," forms part of the same remarkable group of paintings. The pictures on this one wall of Gallery III. would alone richly repay a visit to the exhibition.

As usual, Gallery IV. contains the specimens of early Italian art which have been lent, but these are neither so numerous nor so important as they have been in some previous years. There is, however, a remarkably fine Pinturicchio, lent by Mr. Charles Butler, — the Virgin enthroned under an architectural canopy, with a distant landscape on either side, and in the immediate foreground flowers springing up with their blossoms brightly relieved against the dark ground or shadow beneath, in a manner which seems to suggest the source of some of the schemes of diaper decoration which we have seen revived and popularised recently. There is a strange, wild "Pieta" by Mantegna, in feeling reminding one of Albert Dürer; and there is one of the finest things Holbein ever painted, the portrait of Sir Thomas More, lent by the widow of the late Mr. Henry Huth, a painting in which it is difficult to say whether one admires more the splendid colour of the whole or the admirably real and characteristic expression of the features: we feel that we have here the man exactly as he lived and looked. There is a very interesting Titian in this room, the portraits of the infant daughters of Ferdinand of Austria. Titian has admirably discriminated the character of the three children, the youngest of whom is a child in the cradle; the dress of the two elder, white silk damask, is, from its want of colour, a difficulty in the painter's way, though in another sense it serves to give a marked character to the work. This child-picture, so full of character and interest, may be compared with that by Antonio More of the daughters of Philip II., a picture lent by the Queen. Here we have two children in rich costumes, but they are just that and nothing more; the dress is what attracts the attention, the faces are mere faces. There is in the same room a curious and interesting Giorgione containing some very fine painting, though unsatisfactory in general effect; it represents the immoral and cruel Malatesta di Rimini and his mistress, admonished for their sins by the Pope's legate. Apart from the artistic interest of the picture, it is curious to find a moral subject of this kind chosen by the volatile Giorgione, and equally curious to find the wicked and debauched Malatesta such a fine, quiet, high-browed, and thoroughly respectable-looking man; but it is very likely entirely true to fact in this respect. The union of the noblest and most polished manners with the most utterly vicious life was one of the characteristics of society in the days of the

Renaissance. The figures are seated in a landscape, the distant portions of which are painted with a rather naïve indifference to perspective or scale; the lady, who does not impress one by her beauty, seems much affected by the legate's discourse, which Malatesta receives with calm and polite indifference. Possibly Giorgione's intention was to indicate the entire futility of sermons to convert a practised debauchee. Some fragments of marble sculpture make an effective foreground accessory. The picture is very interesting from more points of view than one. There are a good many other works of more or less interest in the same room, but we must stop. We congratulate the Royal Academy on having been able to get together so fine and interesting a collection, and so keep up so well the prestige of the valuable series of exhibitions which we are so much indebted to them for inaugurating.

#### THE GROSVENOR GALLERY.

The most noteworthy portion of the winter exhibition at the Grosvenor Gallery, which was opened this week, is the collection of decorative designs with which the east gallery is filled. This is, as those who know the leanings of the Grosvenor Gallery exhibitions would be prepared to find, nearly all of one school, and that a school, in some respects, open to much criticism; but it is, nevertheless, a remarkable collection, and of special interest, as exhibiting the decorative treatment of the figure in various forms.

The most important contributions are those of Mr. Burne Jones, whose peculiar genius almost leads him to work in a decorative style even in designs which do not specially profess to be intended as decorative. His usual style of design hardly needs conventionalising to bring it into harmony with the decorative purposes and processes; and the finest qualities of his art are exhibited in their best form in work of the class here illustrated, while some of its shortcomings do not appear so marked as in works which are less purely decorative in aim. The remarkable and almost wearying similarity of style and expression in his heads, those of female figures especially, which appears a serious defect in paintings that come at all near to the representation of life, may be regarded in decorative painting as merely the natural and not unsuitable result of the endeavour to treat the figure as a leading element in decoration, and, therefore, to eliminate naturalism from it.

Perhaps the finest, certainly the most striking and unusual of these works, is the circular painting that hangs at the top of the room, illustrating the verse from the prophet Daniel. One like unto the Son of man came in the clouds of Heaven." The design represents the figure of Christ seated in the centre, and borne by a multitude of angelic wings which form a background to the figure, and from amid which here and there emerges the face of an angelic being, half seen amid the plumes. The whole expanse of the painting, except the faces and the central figure, is of a purplish blue, that being the colour of the angelic plumage; and the success of the painter in achieving a fine and rich effect with this uniform and not very promising colour is remarkable, as well as the floating movement imparted to the whole. Near this is a design for a three-light stained glass window, figures in the two outer compartments, and a conventionalised representation of the pelican legend in the centre. We presume that some part of the surface treatment of the part which forms the background is not represented here exactly as it would be in execution in stained glass. The crimson border, and other portions, would probably have the surface diversified with diaper, as is shown in part of the centre compartment. This centre compartment is in colour and design a masterpiece of conventional treatment of objects (the pelican's nest, the trunk on which it rests, &c.) which if naturalistically treated would look very weak and ineffective in stained glass. Another glass design, two groups of angels for a window in Salisbury Cathedral, again produces a grand decorative effect in the treatment and colour of the masses of wings which overshadow and form a background to the figures. There are two other and larger stained-glass designs for a "Last Judgment" and a "Paradise." In the first of these the three figures in the centre, who produce and read from the book of Judgment, are very finely grouped, and again a very rich effect

is produced by the wings behind them; but one begins to feel that this resource may be employed too often to retain all its effect. The figure of Justice with the balance above these is, it must be added, very undignified and weakly drawn; and in both of these large designs, while admiring the decorative effect of portions, we cannot but be struck with the puerile conception of the whole; the figures in the "Last Judgment" arising composedly out of holes in the ground, all with the same languid, expressionless faces, and the mystic "Lamb" in the "Paradise," on the top of a conical hill with conventional rivers flowing down it. Such an idea is only fit to amuse children.

Among Mr. Burne Jones's other contributions are two decorative studies of "A Sea-Nymph" and "A Wood-Nymph"; the figure in the former, which is really the "mermaid" of legendary lore, is very good, the fishy portion so effectively drawn and painted, and so well joined to the human trunk, that one is almost tempted to believe in the existence of such a being; but the conventionalised treatment of the sea is most unhappy, and may be best described as a series of rounded lumps or hillocks; it might be excusable in a design for a mosaic, or some such highly-artificial and unbending process, but at the best it is exceedingly ugly, and in no real sense decorative. The wood-nymph is a clever combination of the upper part of a figure with a foliage background; it is rather sickly in colour. "Cupid's Hunting-ground" is a composition in low relief in gesso, with much gilding, similar in effect to some other of the artist's works which we have seen in previous exhibitions in this Gallery; its decorative effect is excellent, but that is all its interest.

Mr. H. Holiday is a tolerably large contributor. Some of his designs for stained glass are excellent, among others his portrait figure of Archbishop Langton; and the three cartoons for figures of Theology, Music, and Painting are very good specimens of allegorical decorative figures. His stained-glass design for "Fortitude vanquishing Evil" is certainly effective, but very odd in appearance; "Fortitude" is a female figure entirely arranged in gill armour of small scales, closely fitting the body; at first it looks merely like a naked figure covered with scales, and suggests the idea of a demon rather than of a "Virtue." Mr. Walter Crane exhibits a remarkably pretty and original design for a wall-paper founded on the story of the sleeping beauty, in which small figures carrying out this idea are worked into a diaper design of foliage, with very pretty effect. His design for needle-work, "The Fates," is also admirable, and precisely suited to, and looking like, needle-work design. Two small drawings by Mr. Tadema, on tinted paper, studies of a "Mars and Venus" and "Bacchus and Silenus," are rather unusual specimens, to most exhibition-goers, of Mr. Tadema's work; they are, we need hardly say, admirable little bits of drawing; the manner in which the texture of the big rough earthenware bowl in the second-named design is conveyed to the eye is a notable example of this artist's power of representing the character of surface and material. Mr. Richmond's "Birth of Venus" is a very spirited design in illustration of this well-worn subject, which is represented in three works in the Gallery. Mr. Richmond's Venus is tossed up out of the sea, so to speak, by two fully-draped figures with very fine and energetic action; the Venus herself is pretty, but not a figure of the highest type; still she is an acceptable Venus. The contrast between this and each of the other two specimens of the same subject is amusing. A French painter, M. Dubufe, sends a bony figure kicking and smirking in a big shell, with exceedingly long and luxuriant red hair; while Mr. Spencer Stanhope, in a small painting in the corridor, shows us a thin-faced sad-looking woman, a sort of factory-girl undressed, with hair like oakum, stepping solemnly off the back of a Noah's ark-looking dolphin on to the shore. The inventors of that lovely myth of the birth of Venus from the sea little dreamed what use it would be put to by prosaic painters in these latter days.

The cartoon of Mr. Poynter's fine mosaic of St. George is contributed, and there are other pieces of work worth looking at in a decorative point of view. The idea of getting together a collection of specially decorative work was a very good one, and has led to the exhibition of some very fine work, especially as regards colour and effect. At the same time one cannot avoid

\* The pose side of the subject is rather sad; the two young men quarrelled before the picture was finished, and each repudiated the obligation to pay for it.

the conclusion that the intellectual interest of a good many of these designs is not high, and that a much higher interest might be attained if with the same richness and force of colour were combined more variety of expression, and freedom and dignity of action, than we find in many of these examples. Mr. Poynter's well-known design, just referred to, serves, in fact, to point a moral in regard to this. It is not so rich or forcible in colour as some of Mr. Burne Jones's productions, but it is noble and masculine in conception,—the St. George is a figure we look upon with respect and with a human interest, as a fine embodiment of the idea of youthful chivalry, while too many of Mr. Burne Jones's figures can only be accepted or palliated in consideration of the fine colour effect for which they furnish the occasion. Among the decorative work may be mentioned a design by Mr. Milais, we understand an early production, for the tracery of a Gothic window, in which the curved lines are worked into the form of what may be called rudimentary angels, hand in hand, or rising to meet each other from either side of the window compartment; the design is, we must confess, quite un-architectural, but there is a poetic strain about it, reminding one a little of Blake.

The West Gallery contains a considerable collection of water-colours, of which the best in the main are those from foreign sources. One end of the room is devoted to works contributed by Liverpool artists; the average of power shown in them is not very high. Among the English contributions, one work by Mr. Parsons, "A By-way," a bit of quiet English country landscape, is remarkably fine. We have often called attention to the fine qualities of the water-colours contributed to the Grosvenor Gallery by this artist, but this is the best we have ever seen. There is also one of the very worst drawings we ever saw exhibited by an artist of such ability and originality as Mr. J. W. North: this is called "An English country landscape," and contains about as bad a cathedral as could be seen, and a horse towing a boat, which is worse in its way than the cathedral. Between these two extremes are several very pleasant and some rather powerful bits of landscape-painting. Mr. Poynter's small work, "Battle-dore and Shuttlecock," is a beautiful little thing; and Mr. A. B. Donaldson's Lincoln landscape should be specially looked at. But the water-colours as a whole are a rather mixed collection: the real interest of the exhibition lies in the decorative work in the east gallery.\*

#### OFFICIAL CONDEMNATION OF THE SOUTH ESK BRIDGE.

IRON IN CONSTRUCTION.

The doctrine that prevention is better than cure is one that Englishmen, as a rule, are remarkably slow to learn. If ever any signal and memorable lesson could have changed the character of a people, by leading them to set to work systematically to cure themselves of a great defect, it might have been thought that the battle of Hastings would have had that result. The annals of the Crimean campaign, however, showed that we still prefer learning our lessons under the most inconvenient and dangerous stress. We are glad to see one result of a more encouraging nature derived from that terrible lesson that was read to us on a stormy night twelve months ago. The Railway Department of the Board of Trade has so far learned wisdom from the collapse of the Tay Bridge, that Colonel Yolland has reported against the sufficiency of the viaduct over the South Esk river near Montrose, on the Arbroath and Montrose Railway, now in course of construction by the North British Railway Company. The question of the apportionment of responsibility between a railway company and the Board of Trade is one of considerable difficulty. But there can be no doubt that, whatever may be the best mode of dealing with such difficulties, the old maxim *Salus populi suprema lex* applies in such a case as this. It would be too much to be borne for us to have a second Tay Bridge catastrophe while the Board of Trade was waiting for further powers, or unable to act from a fear of responsibility. We, therefore, rejoice,—taking it for granted, be it observed, that a Royal Engineer officer is not

reporting without due knowledge of the case,—to see that the Board of Trade inspector calls attention to the fact that a sufficiently strict supervision has not been exercised over this bridge while in process of erection. He gives his opinion that the foundations are insecure, a very grave charge. Not only so, he further challenges the general design, and objects to the nature of the material, viz., cast iron. Colonel Yolland deduces from the evidence taken before the Tay Bridge Court of Inquiry the maxim that cast-iron columns of small diameter cannot be relied on to support heavy rolling loads. The columns used in the South Esk Bridge are, the inspector says, of about the same diameter as those which broke on the Tay Bridge, and for fracture of which no special cause was assigned. Other evidence, moreover, is referred to to show that this was not an unusual occurrence. The fracture of one of these columns might possibly cause the viaduct to fall, and on that ground Col. Yolland recommends that cast-iron columns of the diameter used in this viaduct should not in future be sanctioned by the Board of Trade. As the result of examination of the bridge, the inspector recommended that it should be reconstructed, with substantial piers, for a double line of way, and that securities should be introduced to prevent a train from leaving the rails on the bridge.

We shall, perhaps, hear the other side of this question, and we offer no opinion of our own on the subject, as we have not seen the drawings of the bridge. But, as a general principle, we are disposed fully to agree with Colonel Yolland's view. It must be remembered that the ironage of building, on which we may be said to have entered during the last half-century, has dangers peculiar to itself. While metal offers to astonish the world by the audacity of its structures, it must be remembered that iron is not an ever-enduring material. The liability to rust is a source of danger which we are too apt to forget. It is hardly possible that even in such thoroughly substantial structures as the Menni tubes, the time should not sooner or later arrive when very grave questions will arise as to the resisting power of the iron. The use of cylinders for securing foundations may be of the utmost value, as in the instance of the Saltash Bridge. But there the cylinders were regarded by the designer as, after all, of a somewhat temporary character. A solid core of concrete and masonry was introduced into the Saltash cylinder, and the bridge would be secure even if the iron rusted away. But when, on the other hand, we have small cylindrical columns employed as an integral part of the permanent structure of a bridge, we consider that the edifice should be regarded with the utmost jealousy.

It must, however, be remembered that there are many railway bridges now standing in this country the piers of which are formed by clustered iron columns. One of the earliest of these was the bridge over the River Avon at Defford, near Worcester, on the Midland Railway. This pattern seems to have become a favourite one on that line. It is thus desirable, on the one hand, that certain limits of height, diameter, and thickness should be stated, beyond which the officer of the Board of Trade regards the proportion of that mode of structure as unsafe. On the other hand, Colonel Yolland's report should act as a reminder to the engineers of all lines on which columnar iron piers have been adopted, inducing them to give special survey to each work of the kind under their charge. Some of them, no doubt, will sooner or later require care. Let all concerned remember that prevention is better than cure.

**The Builders' Ball.**—The thirty-third annual ball is to take place at Willis's Rooms on Thursday, the 27th of January next. This ball, which is held in aid of the funds of the Builders' Benevolent Institution, is a very old-established affair, and brings together so many friends and supporters of the Institution, that we are glad to observe the hon. sec., Mr. F. W. Keeble, has been fortunate in securing the active interest of a number of well-known gentlemen who have accepted the office of stewards. This Institution has done such a vast amount of good in affording pensions to many who have occupied good positions in life, but whose ill-fortune has reduced them in the world, that we cordially invite the attention of our readers to the announcement which appears in our advertising columns, where a list of the stewards and other particulars will be found.

#### THE TRADESCANTS' HOUSE AND GARDEN.

On the 3rd of December last the Metropolitan Board of Works approved of an application on the part of Messrs. J. & J. Goodman for the approval of a plan for the formation of two new roads to lead out of the east side of South Lambeth-road, on the site of the house, with grounds, known as Turret House, and of the names Tradescant-street, S.E., and Walberswick-street, S.E., for the same.

These two streets will finally obliterate an extremely interesting vestige of Old London, although the names given them will serve to recall to some extent the associations connected with the site. The house called Turret House was the residence of the Tradescants, "gardeners to the Rose and Lily queen (i.e., Henrietta Maria, consort of Charles I.), and the garden attached to the house upon which the new streets will be formed was the first botanical, or, as it was formerly called, "physic garden," established in this country.

The Tradescants, father and son, were very remarkable men,—the elder especially so,—and we are indebted to them for the so-called Ashmolean Museum at Oxford, which, although in itself of no great value nowadays, was of great service to science by leading to the formation of collections of a similar character by Sloane, Banks, Lever, and others, which finally resulted in the establishment of a national museum. To their efforts we also owe the introduction of a great number of new plants into this country,—a service which can be scarcely overrated, and which frequently involved a certain amount of personal risk. The introduction of foreign plants seems to have taken place very slowly for many years after the Conquest; for in the sixteenth century we find that only eighty-nine foreign woody plants were known to be cultivated in Britain, exclusive of two varieties of laurestines. In the seventeenth century the example of Sir Walter Raleigh and Gerarde, whose "Herbal" was written in 1597, and was afterwards republished by Johnson in 1633, appears to have produced some effect, for about 131 woody plants were introduced. In the eighteenth century greater progress was made, for 445 trees and shrubs were added to our collection; and in the first thirty years of the nineteenth century no less than 699 were introduced. The efforts of the Tradescants, Ray, Compton, and Evelyn, in the seventeenth century, contributed greatly to these results.

The Tradescants were formerly supposed, on the vague authority of Antony à Wood, to have been Dutchmen or Flemings; but it is satisfactory to our insular self-love to know that the researches of Dr. Hamel, of St. Petersburg, show that they were Englishmen, and that, in all probability, they were Warwickshire men. There is no record of the birth of the elder Tradescant, but it is certain from the parish register of Meopham that he resided there, and that the younger was born there in August 1603. The will of the younger Tradescant mentions the Tradescants of Walberswick, in Suffolk, in a manner which would seem to imply that they were his kinsmen.

The elder Tradescant made a journey to Archangel in 1618, in the suite of Sir Dudley Digges, the English Ambassador to Russia, and Dr. Hamel discovered in the Ashmolean Library a MS. diary of the voyage in the handwriting of the elder Tradescant. In the year 1629 he was appointed gardener to Charles I., having previously served the Lord Treasurer Salisbury, the Duke of Buckingham, and other noblemen in a similar capacity. He died in 1638, and was buried in Lambeth Church.

The younger Tradescant appears, from the admirable portrait-etching by Hollar, prefixed to the catalogue of the museum at South Lambeth, to have been a man of inferior intelligence to his father, who must have had a singularly handsome and intellectual face. Young Tradescant was childless, and seems to have come under the influence of Elias Ashmole, a crafty, scheming man, who pretended to a knowledge of astrology and the transmutation of metals. Their acquaintanceship began in 1650, and in 1657 the younger Tradescant is said to have made over the whole of his museum to Ashmole, the gift to take effect on the death of the former, which event happened on the 22nd of April, 1662. Tradescant, by his will dated the 4th May, 1661, left the museum to his wife, Hester, for life, and after her decease to the University of Oxford or Cambridge, at her discretion, and

\* We learn that the South Kensington Museum has purchased from the present exhibition at the Grosvenor Gallery the two chief decorative works contributed by Mr. W. J. Muckleby.



introducing most of the great inventions all over the world, and it behoves us seriously to consider the reason why we have not also had the honour and profit of the innumerable smaller inventions manufactured abroad. Why are our London shops and stores full of French and American goods which properly belong to the trade of this country? There was a time when Birmingham supplied nicknacks to the world; now France and the United States in some measure supply Birmingham. Great Britain is a manufacturing country, and America, comparatively speaking, is an agricultural one, yet the United States are enabled to outsell us in our own markets, on account of their labour-saving machinery, the invention of which is greatly encouraged and secured by their cheap patent law. Mr. Thomas Brassey, M.P., lecturing in January, 1878, on the comparative efficiency of English and foreign labour, maintained that we have much more to fear from the highly-paid labour of America, which brought labour-saving machinery and mechanical skill to such a high degree of perfection, than from the lower wages of the Continent of Europe. Referring to the success with which the Americans have competed with us in the making of small-arms and locomotives, he says,—"It would at first sight seem incredible that our engine-builders should have been beaten in a neutral market with no hostile tariff. Anyhow it would have been expected that, if we were beaten, it would have been by the Belgian or German makers, who command an ample supply of labour at comparatively low rates. The contrary, however, has happened, and it is a country where labour is paid at rates unknown in the Old World which has supplanted us. We have been conquered by the mechanical skill of the employer in devising labour-saving machinery, and by the industry and energy of the workmen, who, if they have earned high wages, have worked longer and more industriously than many among our own mechanics have been disposed to do."

Such is not only the opinion of so high an authority on the labour question as Mr. Brassey, but is also the opinion of all who have thoughtfully studied the subject. America is becoming our principal competitor in many things. We are, for example, losing our pianoforte trade, and this country is being rapidly stocked with pianofortes of New York manufacture. It is stated that a firm in New York have taken out twenty-one patents for improving their instruments, and scores of patented labour-saving tools are used in their production. Our watch and silk trades have been driven out of Coventry and Clerkenwell, while a new machine-made watch was being slowly developed in the United States, and what has occurred to our piano and watch trade is occurring also to many other manufactures to the partial ruin of our trade, wealth, and empire. When we are driven to purchase iron or steel tool implements or manufactured goods from abroad, there is evidently something wrong which a Board of Trade inquiry could discover, and there can be little doubt that there are many points in the United States system of encouraging and protecting invention which it would profit us not to envy but to emulate. The expediency of granting patents has been most ably shown in a paper read by Mr. F. J. Bramwell, Vice-chairman of the Society of Arts, in a paper read before that institution on December 2nd, 1874, in which he proves that those who urge that patents are mischievous to the State, hurtful to invention, obstructive to free trade, and that they raise unnecessarily the price of commodities, are greatly in error. It is quite true that the public depend upon competition to preserve just prices, and that commercial success depends more upon superior skill and workmanship than upon the monopoly of patents; but invention needs a stimulus, and an exclusive right for a definite period as a reward for discovery seems only just and politic. This advantage is secured to the inventor by a patent.

A patent is not a privilege given in exchange for an invention; it is, or ought to be, a contract entered into by the Government on behalf of the public, of the first part, and the inventor, of the second part, to protect the inventor, and to induce him to perfect and use, or bring into use, certain novelties or products for the mutual benefit of the public and himself. It has been proved that the public profit, most generally, many times more than the inventor; so that, if any privilege is granted, the inventor is making known his secret through the Govern-

ment to the public. Of course, no patent is granted for a principle; it must be something saleable, and have a commercial value either chemically or mechanically. Patents are successful in proportion as they can be applied more or less universally. A patent by itself possesses no intrinsic value whatever. Its worth depends on the ability of the patentee to manufacture the invention in such a manner as to induce the public to purchase the same. We must combine simplicity and cheapness with efficiency if we would command the market, and do all we can to save time, labour, and expense. There are many works in which labour-saving tools might be most advantageously employed to facilitate their execution, the invention of which should be encouraged in every possible way. We have all to work for our living, and honour alone would be a poor recompense for labour; yet I believe the English character to be such, that patriotism would prevent any one who took an interest in his trade from keeping back any improvement likely to tend to the benefit of our fellowmen. This feeling has led many to consider it would be well to have no patent laws. It was the late Mr. Isambard Kingdom Brunel's opinion that the system of protecting inventions by means of letters patent was productive of immense evil, inasmuch as the secrecy required in working in order to conceal the process before the patent was granted, prevented an inventor seeking valuable advice which might either lead to an abandonment of the project or to its improvement in its weak points. The aggregate benefits to the real inventor were often small compared with the first cost, and the invention generally changed hands once or twice, or oftener, before coming into operation. It is certainly to be regretted that those who make money by patents are more often assignees than inventors, who draw an exorbitant profit by having purchased at a small price the result of another's brain, because the inventor has not the capital to manufacture the subject of his invention, or to bear the cost of litigation in defending his rights. His patent may also, after much expense, become completely worthless,—as, indeed, a large proportion of the patents annually taken out become,—or his invention may be improved by another. The majority of patents are more adaptations than original discoveries,—novel improvements combined with greater utility. A patent is in no case a grievance. No man is compelled to ask for a patent. It is voluntary, and without the hope of an exclusive privilege I am afraid few nations could unanimously agree to abandon patents altogether; but while other countries give protective rights we must do the same, only let us encourage every step towards facilitating the obtaining of patents. They should be as open, free, and cheap, as possible. Authors' works are protected for a long time at a small expense; why should not inventors be equally well treated, since their discoveries are generally the result of severe brain-study? We should give them at least twenty-one years' interest or copyright in their inventions. There is, however, this difference between industrial property and copyright, that patent right precludes the possibility of the same thought being carried out, at least for a time; but copyright does not. The Earl of Derby has so plainly drawn the distinction between patent-right and copyright in one of his speeches, when Lord Stanley in the House of Commons, that I feel I cannot do better than adopt his distinction. He held "the analogy to be a plausible one, but he thought it would not hold water on being looked into. The difference was simply this: he did not rest it on any abstract ground as to the distinction between invention and discovery, but on the obvious fact that no two men ever did or ever would write, independently of one another, exactly the same book; each book, be it good or bad, would stand alone; whereas it might happen that two or three men, quite independently of one another, would hit upon the same invention. That alone established a distinction between the two cases."

In Austria-Hungary, where the dual system of Government is established, each Ministry issues patents, and thus an inventor, desirous of securing an exclusive right to his invention, must provide himself with two patents, which are both granted on a single application, and on one payment of the fees. The laws of Austria-Hungary class inventions under three heads,—(1) Discoveries, i.e., the introduction of the methods of production hitherto unknown in the

country, and the reascertainment of methods once known but now forgotten and lost; but patents are not granted for the discovery of scientific principles, unless the latter are actually brought to bear upon production; (2) Inventions, i.e., the creation of a new object by new means, or a new object by means already known, and of a known object by other means than those used for its production; one patent is never granted for two or more inventions, except in cases where both or all of them are to be used in the production of one and the same object; (3) Ameliorations, i.e., any addition to an existing invention, which improves the quality or reduces the price of the product of such invention. Patents for ameliorations are granted for the part ameliorated, not for the whole invention. The duration of a patent cannot exceed fifteen years without the special consent of the Emperor, but patentees can procure for one or more years the renewal of patents originally granted for less than fifteen years. The fees upon patents, whether for natives or foreigners, are as follow:—

	Fl. Kr.	£.
For the first five years .....	100 10	19
For the second five years .....	200 20	20
For the third five years .....	400 40	40
For fifteen years .....	Fl. 700	£70

An examination is made by the Ministry to see that the various legal forms are complied with, and that the description tallies with the invention. The applicant alone bears the consequences of any encroachment on the rights of others. The Government used to have the working of the invention examined by a Commission, who, in cases, found the working to be insufficient; but this practice is now abandoned, and, the same as in France and in Belgium, the patentee must now, in the event of litigation, be able to produce evidence of the working, in default of which he loses his patent. The patentee must make use of his patent within one year from the date of its issue, and not allow two consecutive years subsequently to elapse without working his invention, or the patent will lapse and become public property. The Ministry of Commerce is alone competent to decide on the invalidity or lapsing of patents.

In the Grand Duchy of Baden, patents are only granted for those things which are considered novel and peculiar. A patent may be refused if the invention does not appear to be generally useful. The Board of Trade has to decide on the written report, whether the patent is to be refused or not. Patents are limited to a period of three years. The stamp charged on petitions is fixed at 15 kr. (about 5d.), and the tax on a letter patent from 15 fl. to 500 fl. (1l. 5s. to 42l.), in addition to which the cost of the examination of the application for a patent must be reimbursed to the Treasury, generally 6 fl. (10s.) a day for the time spent by a technologist. A patent may be extended to a period not exceeding fifteen years by special petition.

In the Grand Duchy of Hesse it has always been a rule never to grant a patent for more than five years, and the holder has to pay, once for all, a stamp of 20 fl. (about 1l. 13s. 4d.) on his letter patent, whether the period is one year or longer, up to five years. Applications from countries where patents are not granted, such as Switzerland, Hamburg, Mecklenburg, &c., can not obtain a patent in Hesse.

In Bavaria, a sliding-scale of fees is adopted, and the produce of the fees is devoted to the encouragement of trade and industry. The term of a patent may be prolonged if it has been originally issued for a shorter period than fifteen years, but no privilege can ever be made to extend over a longer period than that of fifteen years from the date of its original issue. The fees vary from 25 florine for a term of one year, up to 275 gulden, or about 28l. for the maximum term of fifteen years.

In Belgium, patents are granted without previous examination either of the novelty or of the merit of the invention, and at the risk and peril of the inventor. The cost varies from 10 fr. for the first year, 20 fr. for the second, and so on with a yearly increase of 10 fr. payable in advance, and may last for a period of twenty years, but the time for which a patent of importation is granted must not exceed the period which the original patent has still to run in the countries where it was first delivered. A patent of invention is granted to the inventor who takes out his Belgian patent before obtaining letters patent in any other country. In case of modification of an invention a patent of improvement

conferring the same rights as a patent of invention may be obtained, the term of which shall end at the expiration of the original patent. A patent must be worked in Belgium within a year from the date of its having been worked or used in a foreign country, which term may be prolonged for a second year by special permission. The Government, however, seldom or never interferes as regards the working of any patent unless asked to do so.

In *Brasil*, patents are granted for periods of from five to twenty years, a longer term being concedable by law. The recipient must put his invention into practice within two years after the concession, unless this term shall have been extended by law. The patent becomes void if the discoverer obtain for the same invention a patent in a foreign country,—a provision copied from the French law of 1791, which is admitted to be contrary to all justice and economical principles. The patent is granted gratuitously, but the actual legitimate official expenses involved by the stamps and documents vary from 9*l.* to 14*l.* In 1869 it was proposed to divide patents into classes upon which should be paid a tax in proportion to the importance of the industry, not to exceed 30 milreis (3*l.* 5*s.*) in the first year, augmenting progressively 10 or 20 per cent. than twenty years. A patent lapses if during a whole year no use is made of the invention, unless it can be proved to be from accidents beyond the control of the patentee.

In *Canada*, patents must be manufactured within two years of their grant, and manufacture must be continuous. The cost equals 12*l.* (\$60), and the term fifteen years.

In *Chili*, the term of a patent cannot exceed ten years, the patentee paying a sum of 10*l.* into the Treasury as a contribution to the Museum in which the model of his invention is kept, together with a full explanation of the use and method of the article he has invented.

In *Columbia*, inventors in possession of a foreign patent may obtain one for the same invention on condition that its expiration shall coincide with that of the foreign patent. A fee of from 5 to 10 dollars (1*l.* to 2*l.*) is paid to the Government for each year of the duration of a patent, the term being not less than five nor more than twenty years. A patent lapses if during a whole year no use is made of the invention, unless it can be proved to be from accidents beyond the control of the patentee.

In *Denmark*, no laws have been passed on the subject of protection to inventions. The fee charged at the Ministry of Interior, according to custom, for the whole transactions is \$17 (1*l.* 17*s.* 6*d.*), and the time occupied in the correspondence is about two months. The invention must be carried out within a year, and the patentee must continue to employ during the three four or five years for which the patent is granted. Imported inventions are generally protected for ten years, and in special cases fifteen years.

In *Greece*, a special Act is required to secure the patentee the rights he would claim, as they have no law affecting inventions.

In *Guatemala*, an inventor makes a clear and succinct description of his work before the Ministry of Interior, swearing that it is his own discovery, unknown in the country, and the Ministry of Interior appoints a commission to examine the invention. The application must be accompanied with drawings or models, as the case may require, and upon the originality of the invention being established the President of the Republic concedes the exclusive right for a term of years not exceeding ten years, previously to receiving which privilege, the person soliciting it must pay into the public treasury the sum of \$50, which is applied for the preservation and support of the halls established in the Museum. Foreign inventions can be patented for a term not exceeding eight years. It is only possible to renew a patent under special circumstances provided such renewal is solicited at least six months before the expiration of the privilege.

In the Government of *Nicaragua* the inventor enjoys ten years of exclusive property, the improver seven, and the introducer five. These terms may be extended by the sovereign power on the proposition of the Government to fifteen, ten, and seven years, respectively.

The Republic of *Hayti* has no law or practice on patents, but are said to be generally in favour of the French law.

In *Italy* patents must be worked within two years, and working must not cease for any two years during the fifteen years or less for which a patent is granted. The fees increase from 2*l.* to 11*l.* 10*s.*

In the *Netherlands*, a patent is granted for five, ten, or fifteen years, and, in proportion to the time and importance of the invention or improvement, lower or higher charges are made which shall, however, never exceed the sum of 750 g., nor less than 150 g. A patent conferred for five or ten years, on the expiration of that period, may be prolonged in cases where very weighty reasons can be given; but it may not be extended to a longer period than fifteen years. The patent becomes void when no use is made of it for the space of two years after the patent is signed, unless with the special sanction of the Government; and also if the patentee, after securing his patent, shall obtain another patent in another country for the same object. Possessors of patents wishing to make over in whole or in part their rights for the benefit of others are bound to ask the king's approval beforehand, and also the sanction to extend any patent conferred for five or ten years must be signed by the king. The fees paid are,—for a patent of five years, 150 g.; for ten years, 300 g. or 400 g.; and 600 g. or 700 g. for fifteen years, in proportion to the importance of the invention or improvement.

In *Persia* no law exists respecting inventions. In *Portugal* patents are granted for a term of years not exceeding fifteen; and a tax of 120,000 reis is exacted, equivalent to about 26*l.* sterling, out of which amount 75,000 reis, or 18*l.* 12*s.*, are set apart for a fund for the advancement of industry, the remaining sum being absorbed in stamps and fees paid to Government. Exclusive right to import foreign patents is not granted; only the privilege for their manufacture in Portugal is guaranteed by a patent.

*Germany* has recently passed a patent law with fees paid annually, up to a limit of fifteen years, and patents must be worked within three years. The fees increase from 1*l.* 10*s.* for the first year to 3*l.* for the last year.

*Prussia* and some other states found their patent system on preliminary investigation, while others adopt the application system.

In *Alsace-Lorraine* we find the modern French system. Patents are never granted in *Prussia* for inventions of an artistic nature. The only excuse for a patent is that the invention shall have industrial value. They allow the patenting of foreign inventions. All applications are referred to the technical deputation for industrial matters under the control of the Ministry of Commerce. The duration is fixed by the Minister of Commerce, who usually fixes it at three years, but never less than six months. A patent which is near expiring may be, in some cases, renewed, but the entire period for which it can last must never exceed fifteen years. The cost is almost nominal. The application for a patent must be written on stamped paper of 5 sgr. (6*d.*). The answer of the Technical Deputation is given on stamped paper of 15 sgr. (1*s.* 6*d.*), and the patent itself, if granted, is liable to a stamp duty of 1 th. (3*s.*). There is no further tax or duty whatever.\*

#### ART-UNION OF LONDON.

##### THE LOSS OF "THE REVENGE."

In the month of August, in the year 1591, England being at the time at war with Spain, a small English squadron, consisting of six men-of-war, lay at Florés, in the Azores. It was commanded by Lord Thomas Howard and Sir Richard Grenville. The vessel of the latter was a small three-masted ship with a crew of less than 200 men, and it happened, at the moment, that upwards of ninety of these were sick on shore, when suddenly appeared a pinnace "flying from far away," and reported fifty-three Spanish ships of war approaching. It would, of course, be madness for the six English ships to attempt to cope with such a force, and accordingly Lord Thomas Howard, with five ships, sailed away, leaving Sir Richard Grenville to follow so soon as he should have got his sick men aboard. Lord Thomas Howard, it appears, succeeded in escaping the notice of the Spanish fleet; but not so Sir Richard Grenville, who resolved, though with only 100 men able to work the ship and fight, to brave the brunt of the battle with the fifty-three Spanish monsters which came hugely towering all round. And so the fight went on all through the day and the whole night long, and in the morning there lay the little ship with her masts all shot away,—the mainsail hanging over the hull like a pall,—and

\* To be concluded in our next.

the great Spanish vessels all in a ring, fearing to go too near lest the *Revenge* should be blown up and they be involved in her ruin. And this was no idle fear, for Sir Richard called out to his gunner to blow up and sink the ship.

"And the gunner said 'Ay, ay!'  
But the seamen made reply,  
'We have children, we have wives,  
And the Lord hath spared our lives;  
We will make the Spaniard promise, if we yield, to let us go;  
We will live to fight again, and to strike another blow,'  
And the lion there lay dying, and they yielded to the foe."

It is in these nervous words that the situation is described in a poem by Mr. Tennyson, which appeared in the *Nineteenth Century* for March, 1878. The Spanish admiral, struck by the gallant conduct of Sir Richard, sent off his barge to bring him on board his own ship.

It is this moment, when the barge is approaching the *Revenge* and the Spaniards are grouped around, like hunters about a wounded lion, that the artist, Mr. Oswald Brierly, has taken for embodying the scene in a very effective painting. The Art-Union commissioned Mr. Arthur Willmore to engrave a plate from it, in pure line, and we have received a proof of the result, which will be the presentation-plate of this society for the current year. Marine subjects have always a great charm for the English people, whose hearts, in the words of the report of the Council, "ever warm to any story of the sea, on which so many of them have, for centuries, found a home, and many, alas! a grave."

This is a powerfully designed scene; the contrast between the little *Revenge* and the towering forms of the Spanish galleons is well rendered, and the background of calm sea and misty headland, and cloud-flecked bright sky, are not deficient in poetical feeling. We have been informed that the majority of the agents of the Society report this to be one of the most popular subjects yet engraved, and, if the promise of an improved state of trade, which the returns just announced seem to indicate, be realised, a large subscription for the current year may be anticipated.

#### THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.

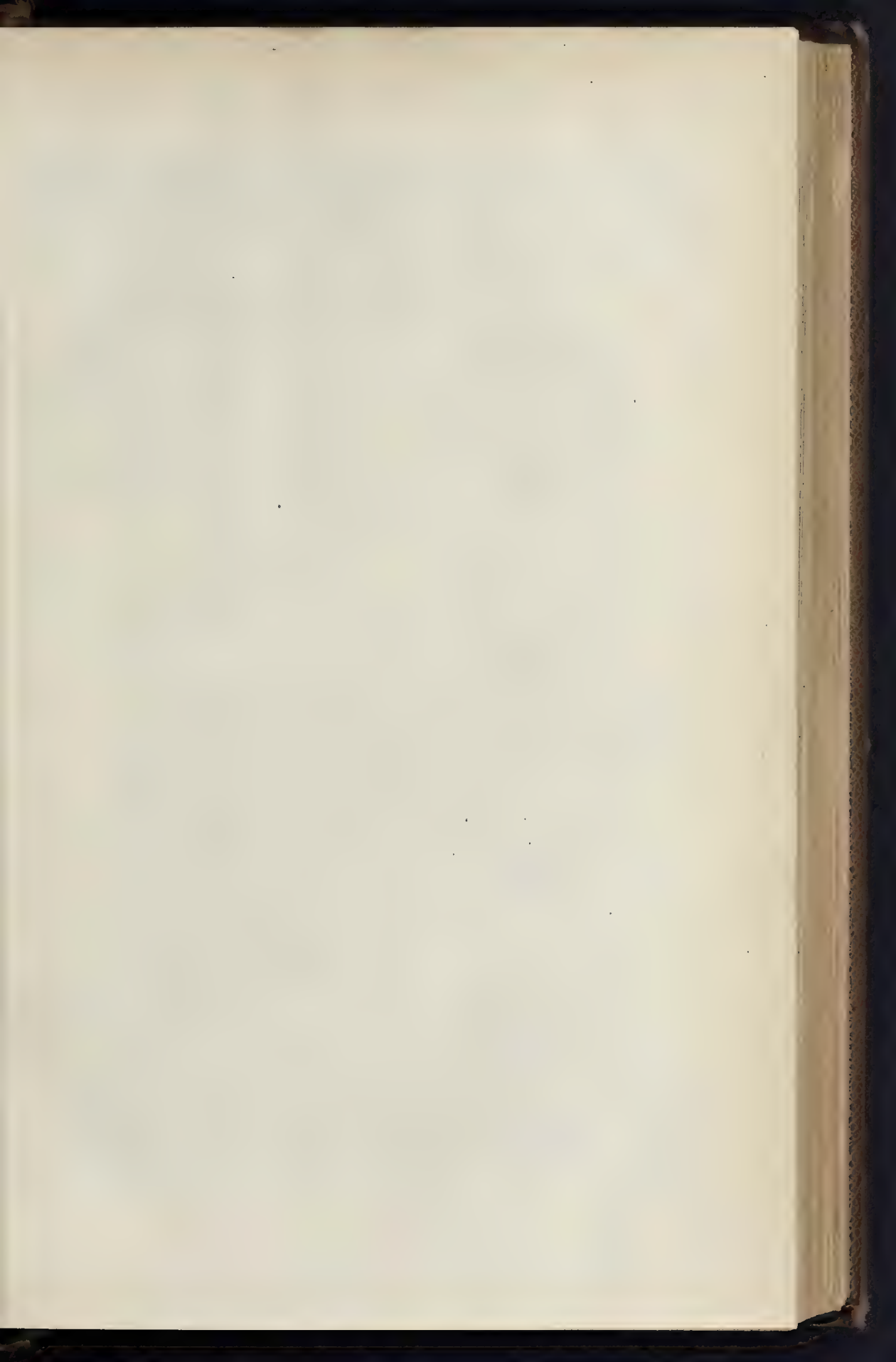
The view illustrates the residence erected for the clergy of the Roman Catholic Church of St. Aloysius at Oxford. The church is situated at the north end of St. Giles's-street, standing somewhat back from the street, and the presbytery, though not directly in front, is placed between it and the street, arranged so that the entrance archway, when built, will be central with the west doorway of the church. The accommodation is shown by the accompanying plans, the ground-floor being appropriated to the general living-rooms, and having a large room provided at the back for parish meetings, entertainments, &c.; the basement to the household and domestic arrangements; and the first and second floors to the private rooms of the clergy, each room being a combination of sitting-room and bedroom by means of a contained recess for the bed and toilet arrangements. The materials used are local white bricks, with Box stone dressings, and the works have been ably executed by Messrs. Wyatt, builders, of Oxford; the carving is by Mr. MacCulloch, Camberwell, London; Mr. Wilkinson, of Oxford, being the architect.

#### COLOGNE CATHEDRAL RESTORED.

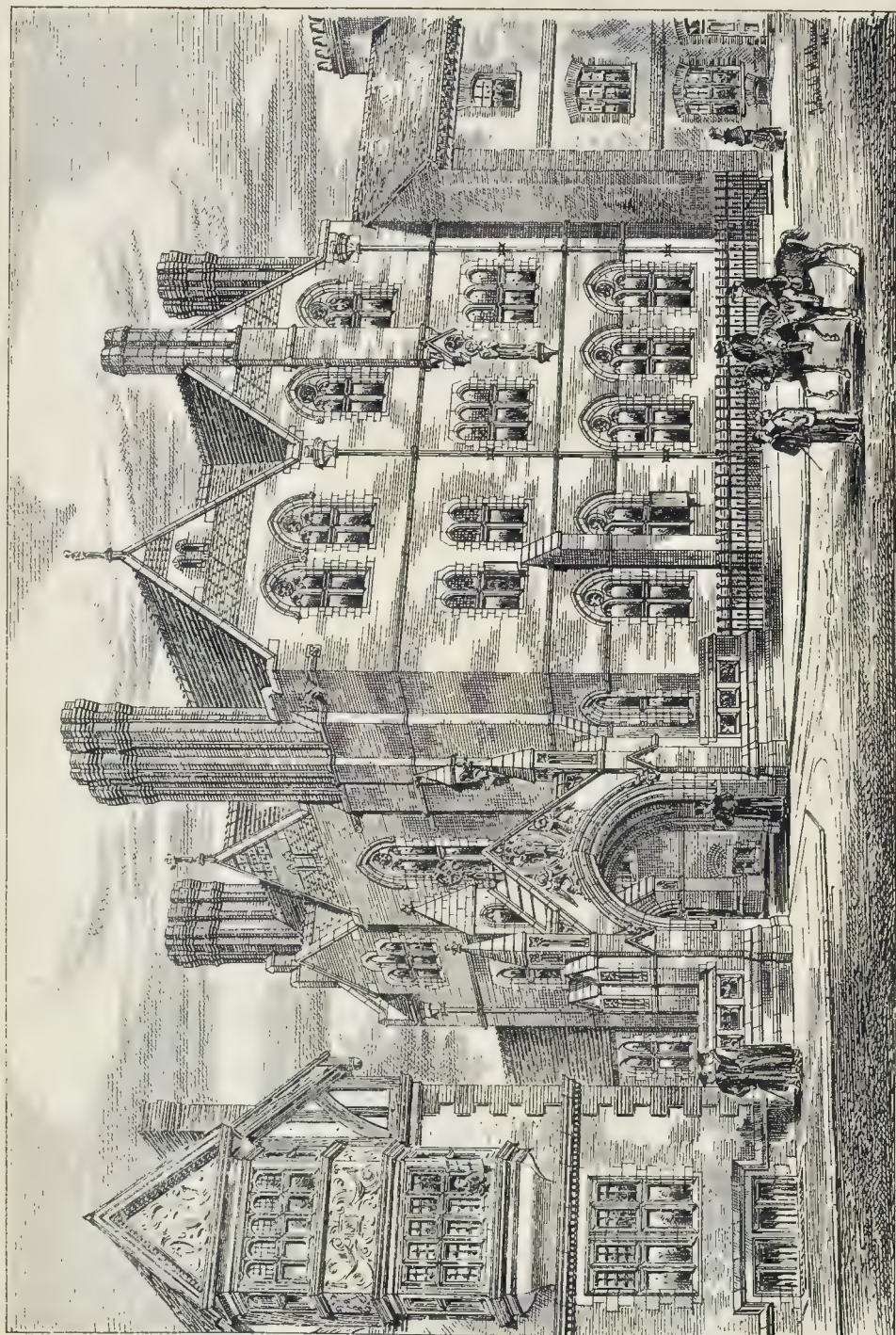
The view in our present number completes what we think may be termed the interesting series of illustrations which we have given of Cologne Cathedral in its restored state. The letterpress accompanying them, moreover, includes observations as regards the designers of the building which ought to induce some discussion in Germany. The present view shows the south transept and the towers.

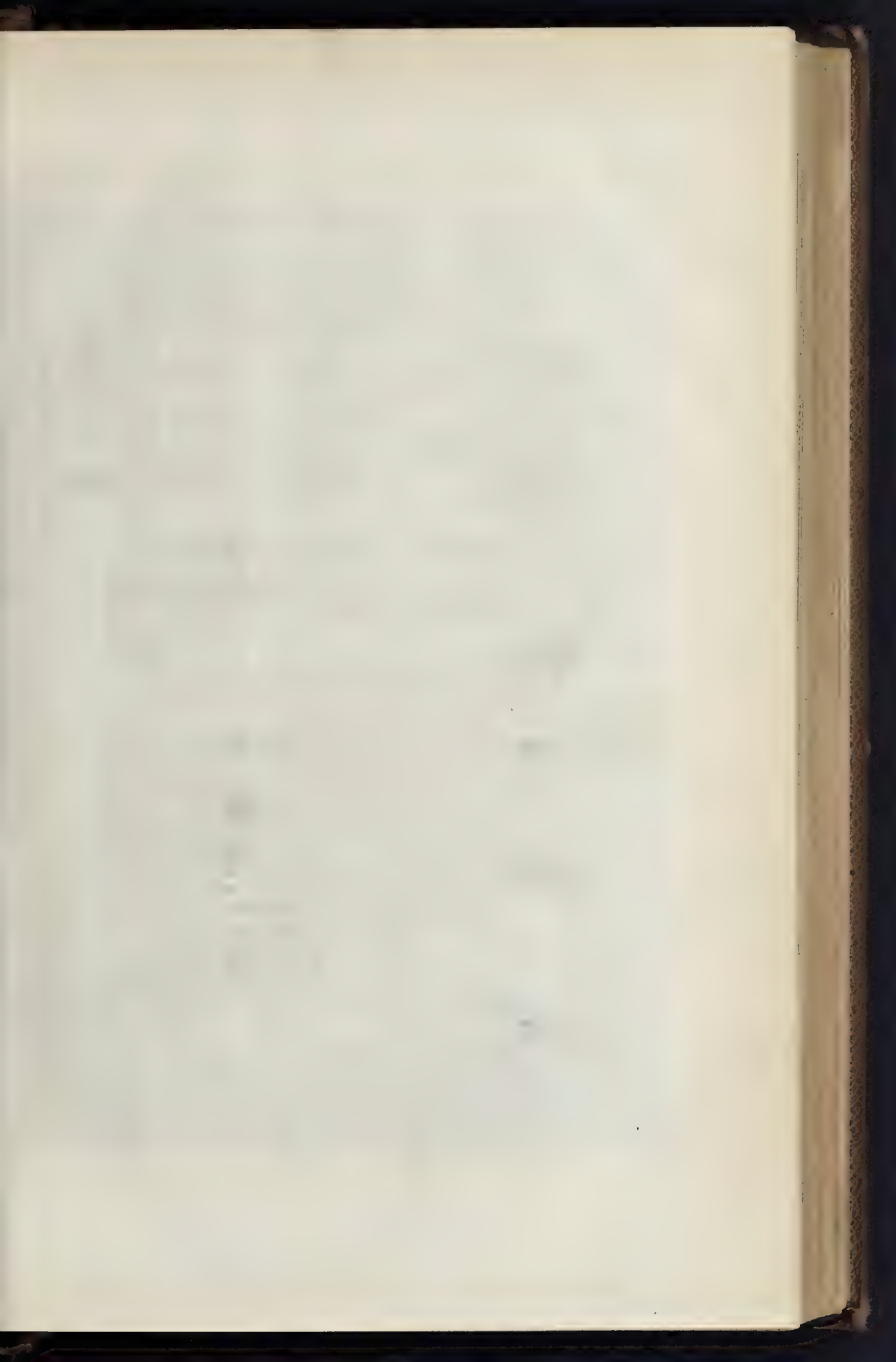
#### Derby Coffee and Cocoa House Company.

The third and central house of this company was opened on the 21st ult., by Lord Edward Cavendish and the Right Hon. Sir W. Harcourt. The house is well situated, and a good business is expected. It originally consisted of a chemist's shop and six good rooms over, and the whole has been altered, fitted, and decorated. The work has been done by Mr. Bakewell, of Derby, Mr. Concellor Wille, of Derby, being the architect.

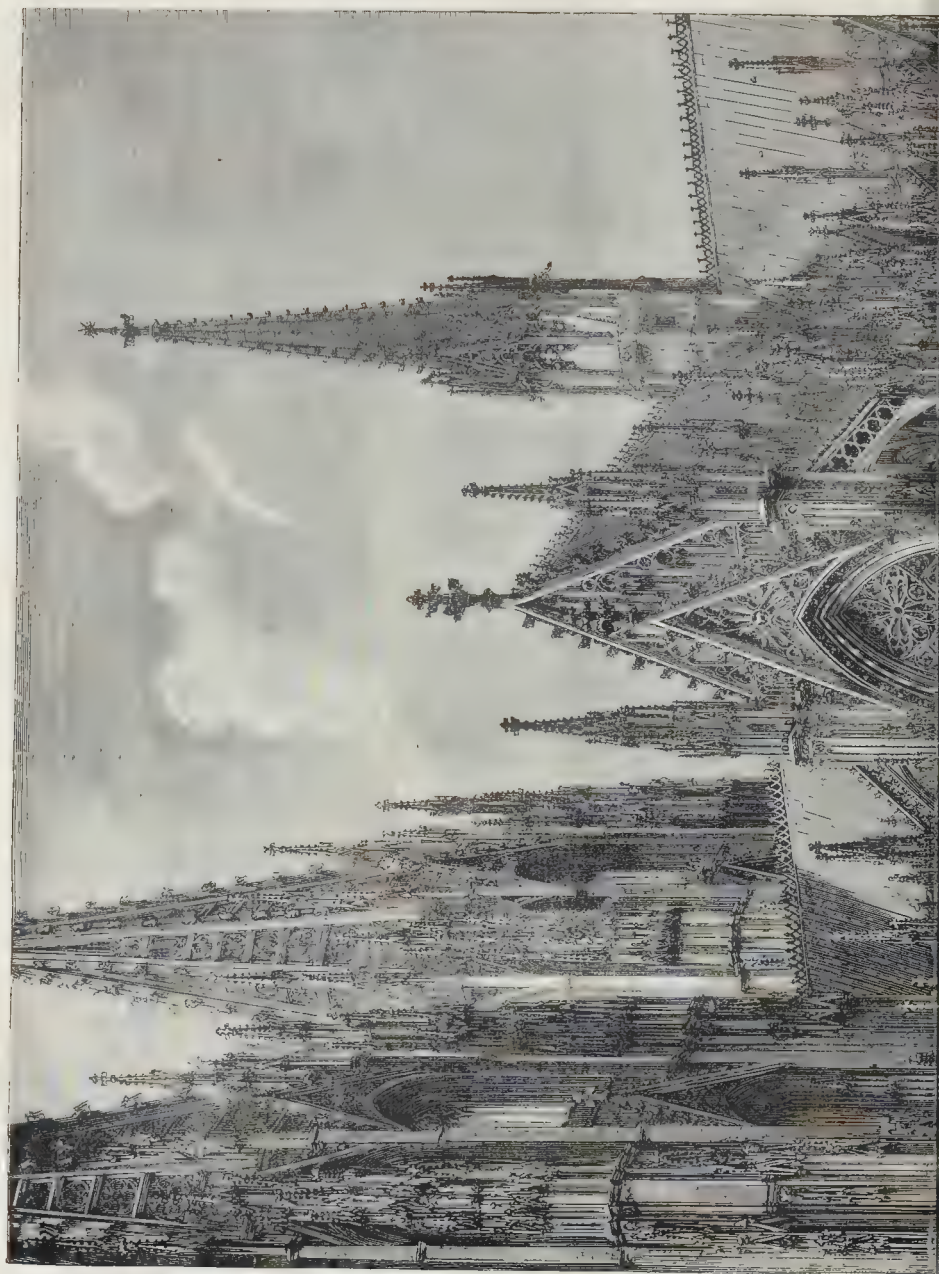


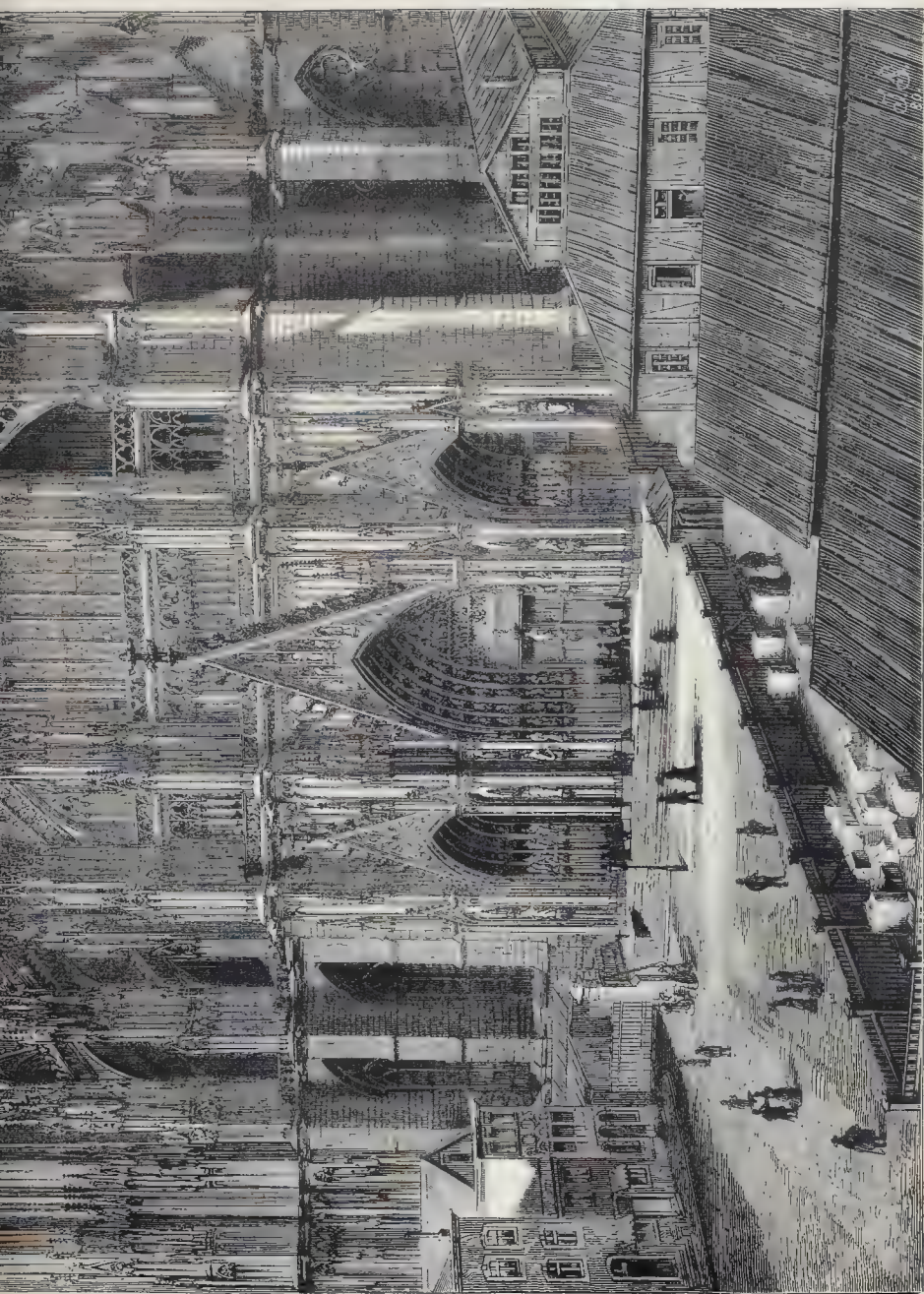
THE BUILDER, JAN. 8, 1881.



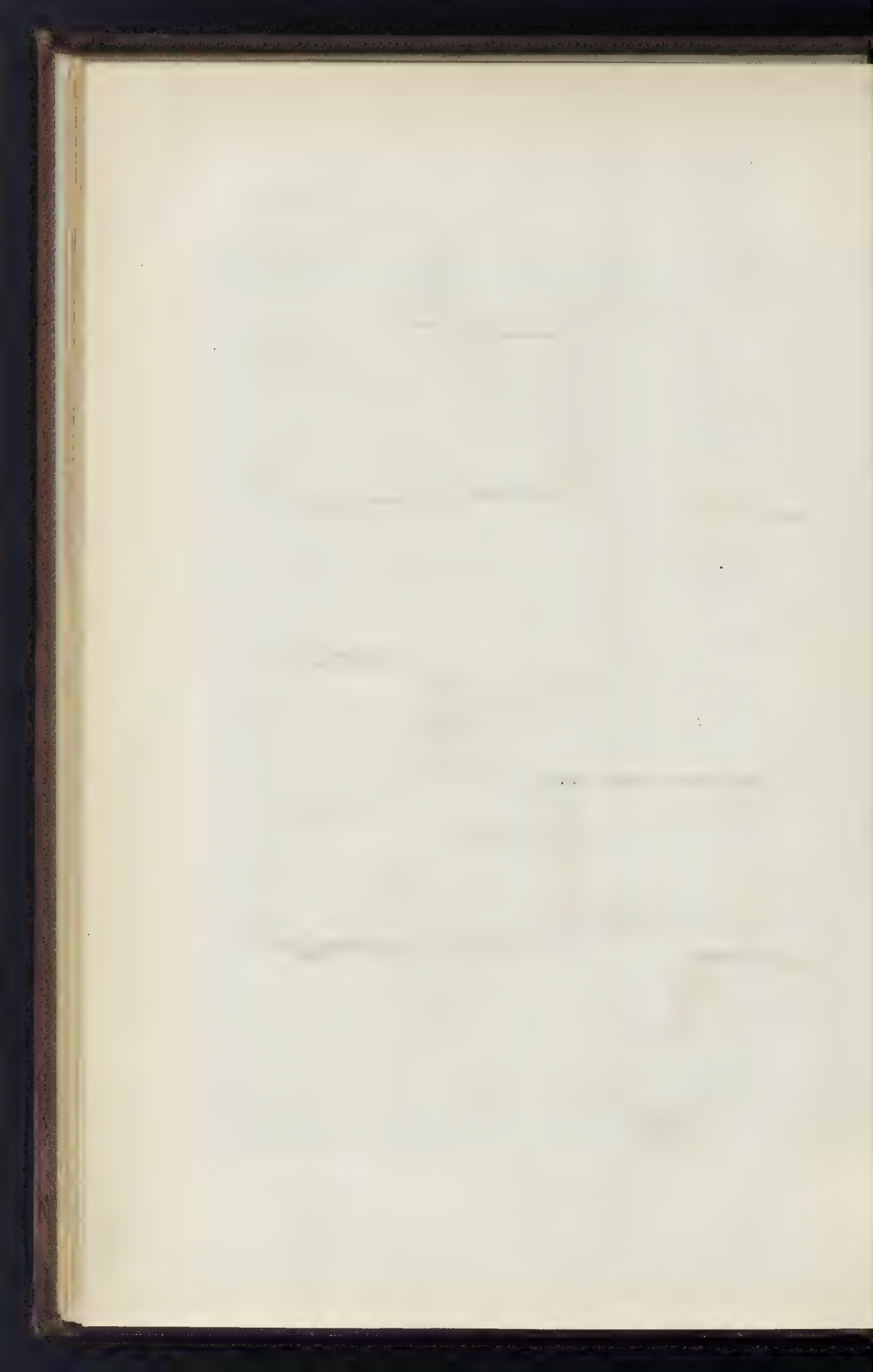


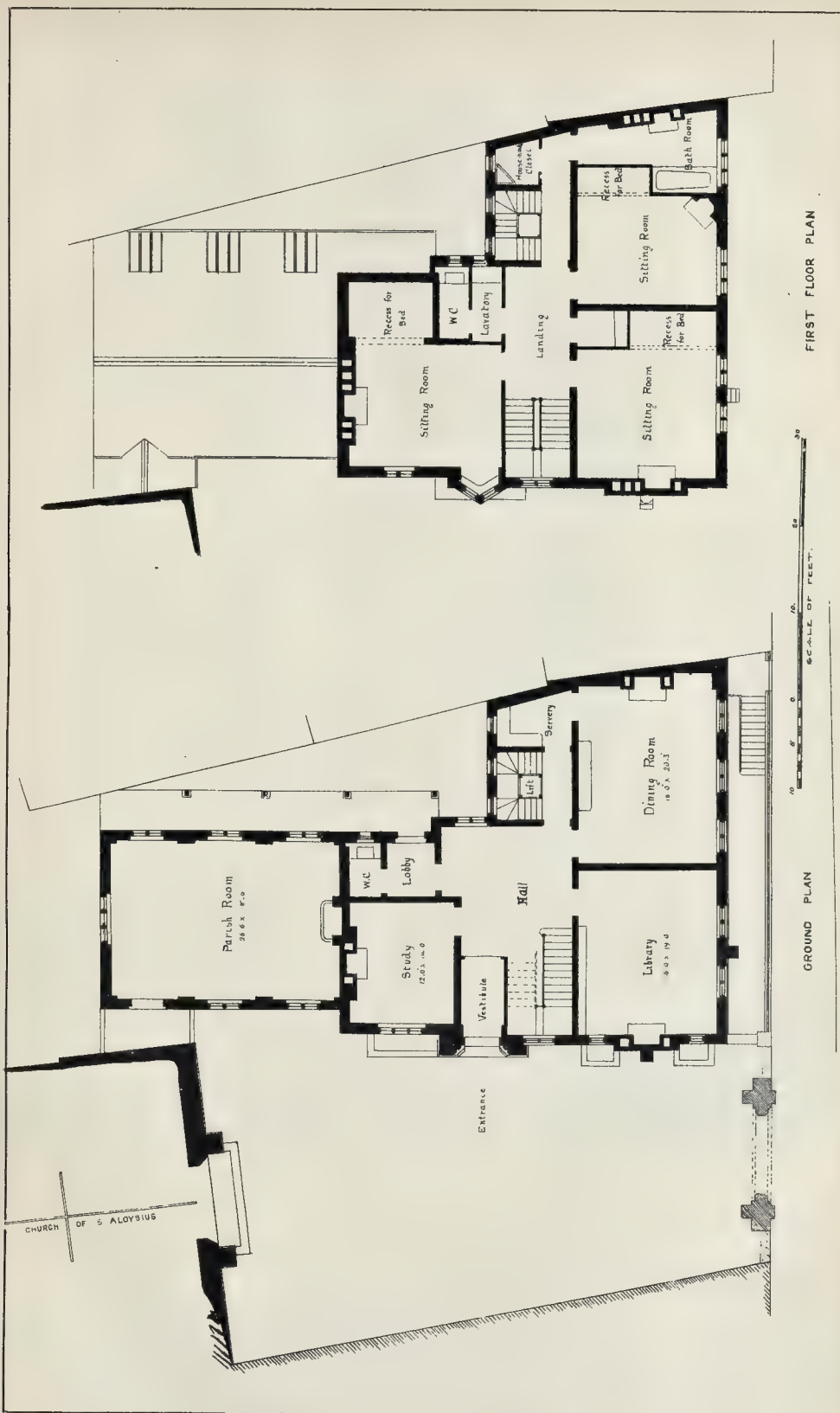
THE BUILDER. JAN. 3, 1881





COLOGNE CATHEDRAL, RESTORED. — VIEW OF SOUTH SIDE.





6. View of the building from the south.

THE PRESBYTERY OF ST. ALOYSIUS, OXFORD.

WYLLIAMS & CO. LTD. ARCHT. & CIVIL ENGRS.





STATUE OF DAVID D'ANGERS, ON MONUMENT ERECTED IN ANGERS.—M. LOUIS NOËL, SCULPTOR.

#### MONUMENT TO DAVID D'ANGERS.

We mentioned at the end of October last the public rejoicings, illuminations, and torch-light processions in Angers (France), to celebrate the unveiling of a monument in honour of the sculptor David.\* This took place on the 24th of that month, and M. Barthélemy de Sainte-

Hilaire pronounced on that occasion a remarkable discourse setting forth the merits of David alike as a patriot and an artist. We now give a view of the statue that crowns the monument. It is the work of M. Louis Noël, sculptor, and conveys forcibly the well-known character of the man. Men of all shades, whether friends of the Republic, for the establishment of which he fought, or not, have joined to do honour to the memory of David d'Angers, the sculptor.

#### CULTIVATION OF LAND ABROAD AND AT HOME.

We have all long since come to understand what is meant by the expression, "questions of the day" applied to certain movements of opinion urging action on some fixed and well-determined point, the details of which, however, are found on examination to require serious study. The consideration of the important

See vol. xxxix., p. 522.



question of hygiene has long since entered this phase. The question of the agricultural treatment of our rich country may be fairly said to stand in a similar position; in our cities the consideration of the hygienic treatment of our vast populations in the provinces, the scientific treatment of our vast stretches of productive land, these are questions which appeal to a great mass of the public. In the latter case, the condition of our agriculture it is clearly seen by the more intelligent that the sole possibility of any change for the better can be expected from a more scientific management of the land. We in England, or rather our farmers, are commencing to realise this fact, though it has long met with obstinate resistance, a resistance the nature of which is admirably shown us by the views placed by Lord Beaconsfield, in his latest romance, in the mouth of old Farmer Thornberry, concerning Lord Brougham's action in favour of a knowledge of chemistry being necessary for the cultivation of the soil. Enormous as are the advances that have been made in the science of agriculture since those days, hard upon half a century ago, it is still felt,—and no less, perhaps more, abroad than even at home,—that Europe must advance still further in this direction in order not merely to compete, but to exist with agricultural rivals in distant parts of the world. From Italy only a few days since we heard this cry from an influential quarter. On the Continent, indeed, the question has long since entered a practical stage, and no fact proves more the manner in which its importance has been grasped than the success of the Agricultural Institute founded in Paris some four years since, and which only a short time ago commenced its winter term. The well-considered and varied course of lectures delivered at the Institut National Agronomique is frequented by a continually increasing number of pupils, a fact which is in itself sufficiently significant. The Institute has for chief object,—we quote from the official programme, which at present lies before us,—“To promote agricultural progress, and to raise the level of the science in its relations with all the branches of production, animal and vegetable,” by forming agriculturists possessing the scientific acquaintance necessary for the best cultivation of the land, of forming in addition a body of well-trained officials under the control of the Minister of Agriculture and Commerce,—an important department of the French Government. Further, of training special professors for the national schools in the provinces. The Institute is composed of a superior school, “*École des hautes études*,” situated in Paris, and of a “school of application,” established at the farm of Vincennes, but a short distance from the capital, and intended specially for purposes of experiment and research.\* A list of the subjects of the lectures, delivered in every case by the most able professors, suffices to show the serious nature of the education afforded. The pupils are in addition trained in preparing plans, levelling, and land surveying, in drainage and irrigation. It can be seen that no branch of knowledge connected with agriculture has been neglected in order to render the cultivators of the future complete and armed on every point. The studies last two years, at the expiration of which time a diploma or a certificate is given to those pupils who are judged worthy. During the holidays in the middle of the year the directors of the Institute provide for those pupils whose parents are not agriculturists the means of passing two months at least on what we understand as a “model farm,” either in France or abroad; on the opening of the next term each pupil is called upon to present a journal and a detailed account of his occupations and studies during the holidays. The report of the directors, published not long since, shows a highly satisfactory state of affairs during the four years that the Institute has been in existence. A number of the pupils have taken important official places in the provinces, many others naturally returning to their property, there to apply the results of their education. As an admirable complement to their curriculum, every year the two pupils whose names stand first on the examination-list, receive, at the charge of the State, a “complementary mission for purposes of study,” either in France or abroad; this mission lasts three

years. A pupil of the Institute, M. Grosjean, who visited England under these conditions in 1879, has within a few days past left for the United States, where he will remain two years. His report on the state of our agriculture has supplied to the French much valuable information, and his special study of the Land Improvement Companies which exist in our country will doubtless lead to some excellent results; for France in this respect, no less than ourselves, is suffering cruelly. It is felt that the only hope of staying off the continuation or recurrence of the existing crisis lies in the intelligent and scientific study of agriculture. The French have taken to themselves the efforts we have been making in this direction; let us, on our side, learn from the example of our neighbours. Not only may our vast tracts of waste land, by proper treatment, be reclaimed, but made highly profitable, while the soil under cultivation may be made doubly and trebly productive, and an unexpected and immense source of revenue thus added to the national wealth.

#### THE LONDON AND NORTH-WESTERN RAILWAY.

In a recent number we gave a sketch of the extent and resources of the Midland Railway, one of the largest of the many great results of English enterprise. We now propose to lay before our readers a brief account of another of those wonderful creations of engineering skill which have rendered our modern England a worthy successor to the road-making fame of ancient Rome.

Though nominally inferior, in point of mileage, to one other English railway,—the Great Western,—and to several of the great foreign lines, yet, as regards the amount of its capital, the importance of the places connected by it, its vast passenger, goods, and postal traffic, and the numerous engineering difficulties surmounted in its construction, there is probably no other railway in the world that can at all compare with the London and North-Western.

We have said “nominally inferior in point of mileage,” as, though credited with between 1,700 and 1,800 miles only, as against the 2,000 and odd of the Great Western and several Continental lines, yet we believe we are correct in stating that, including the extra lines laid down over a large portion of their system, and the vast number of sidings, the London and North-Western Company maintain the astonishing amount of no less than 10,000 miles of rail.

With this extent of roadway, stretching from London in the south to Carlisle in the north, from Holyhead in the west to Cambridge in the east, embracing the most varied districts of England, agricultural, pastoral, mining, and manufacturing, and affording in almost all cases the shortest line of communication between the capital and other important places on its system, including not only such vast centres as Liverpool, Manchester, Birmingham, but also the whole territories of Wales, Ireland, and Scotland, it will be of some interest to inquire what are the resources necessary for the conduct of so enormous a traffic as that passing over the rails of this great company, what are the nature and amount of that traffic, and the principal works to which it has given rise.

The system now known as the London and North-Western has been gradually formed by the union of the London and Birmingham, the Liverpool and Manchester, and Grand Junction Railways, to which three of our earliest constructed lines have been from time to time added the Chester and Holyhead, the Lancaster and Carlisle, and numerous other smaller undertakings. The capital embarked in this vast aggregate amounts to no less a sum than one hundred millions, whilst its average weekly receipts fall little short of 200,000*l.* The company annually carry nearly 50,000,000 passengers and between 30,000,000 and 40,000,000 tons of merchandise and minerals, in the conveyance of which their trains run 25,000,000 miles; whilst there are employed upwards of 2,000 engines, 3,000 carriages, and nearly 50,000 goods-wagons and other vehicles of various descriptions, to say nothing of a magnificent fleet of steamers, a stud of between 2,000 and 3,000 horses, and last, though not least, an army of 40,000 men.

During the past few years their traffic has increased to such an extent that the company have found it necessary to lay down additional lines of rails and to rebuild and enlarge the

stations on various parts of the system. By this means not only are greater facilities obtained for dealing with the traffic, but by keeping the passenger and goods trains as far as possible on different lines, the risk of accidents is greatly diminished. There is now practically a quadruple set of rails the whole way from London to Crewe, a distance of nearly 160 miles, as follows: From London to Epsom, four lines; from Epsom to Rugby, the original main line *via* Blisworth and the new deviation *via* Northampton; from Rugby to Stafford, the line through Birmingham and that commonly called the Trent Valley line through Tamworth; and, finally, four parallel lines from Stafford to Crewe. There is also a third line on the Trent Valley section between Rugby and Nuneaton.

The fact of the London and North-Western being the first great trunk line from London to the Midland and Northern counties, and the facilities afforded by its unrivalled position, have always caused it to be the principal agent in the conveyance of the mails for the districts through which it passes. We thus find it in receipt of some 150,000*l.* a year from Government for its services in connexion with the Post Office,—a sum nearly as great as that paid to the Great Western, the Great Northern, and Midland companies all put together. Many tons of mails daily leave and arrive at the Euston-square terminus, carried chiefly by the well-known Irish Mail to and from Holyhead and the special Limited Mail for the North and Scotland, these trains being amongst the fastest, best appointed, and most punctual in the world. The bulk of the correspondence with the United States is also conveyed by the Irish mail-trains and boats *via* Holyhead and Dublin to Queens-town, at which port it is placed on board the steamers for New York,—a saving of many hours being thus effected as compared with the long sea route from Liverpool. The homeward mails from America are similarly handled.

In connexion with this service we may here mention the astonishing express journey from Queenstown to London accomplished on the occasion of the arrival of the Government despatches relative to the Trent affair, at the time of the American civil war, that portion of it between Holyhead and Euston being probably the most wonderful feat ever performed on any railway. The despatches were brought from America by the *Europa* and transferred at Queenstown to a small steamer for conveyance to Cork, and thirteen minutes after their arrival there were forwarded by special train to Dublin, the 166 miles from Cork to Dublin being accomplished in four hours and three minutes. The transit through Dublin and thence to Kingstown occupied thirty-six minutes, and four minutes after reaching Kingstown the despatches were on board the Irish mail-boat *Ulster* on the way to Holyhead. The passage across the Channel, nearly seventy miles, was accomplished in three hours and forty-seven minutes in most unfavourable weather, and then began the crowning marvel of this wonderful journey. The special express train provided by the London and North-Western Company ran from Holyhead to Stafford, 131 miles, in 144 minutes, being at the rate of fifty-four miles an hour, without a single stoppage, and from Stafford to London, 133 miles, at a slightly lower speed; the entire distance from Holyhead to Euston, 264 miles, being performed in exactly five hours, at an average speed of about fifty-three miles an hour. By taking up water for the engine from the troughs laid down for that purpose, the express ran this long distance with one stoppage only. The 515 miles from Queenstown to London, including all stoppages, occupied fifteen hours.

To some of our readers the mode of watering the engine whilst in motion may be unfamiliar. This ingenious contrivance, the invention of the late Mr. Ramsbottom, chief mechanical engineer to the company, is intended to enable trains to run a great distance without stopping, and also to allow of the employment of smaller and lighter tenders than would otherwise be required, thus in some degree saving the great wear and tear of the rails caused by the enormous weight of the ordinary type of tender. A long narrow iron tank or trough is laid between the rails of the up and down lines respectively, and kept supplied with a full allowance of water; on reaching this trough, one end of a tube underneath the tender enters the water, which is then forced up into the tender's tank by the speed at which the train is

\* It was to institutions of this nature, if not to this very establishment, that Mr. Mundella was referring when he said, some time since, how he had positively trembled for English agriculture when he saw the advanced state of the science abroad,—a fear which, however, on attending the classes of the Leeds Institute, he rejoiced had been greatly allayed.

travelling. This device is in use on the London and North-Western Railway only, other lines over which trains run great distances without stopping, as, for instance, the seventy-seven miles from London to Swindon on the Great Western, and the 107 miles from London to Grantham on the Great Northern, being obliged to employ engines and tenders of far heavier build and consequently far greater "track-crushing" propensities.

Space fails us for enlarging on the many stupendous specimens of engineering to be met with on the London and North-Western, and we can do no more than mention a few of the most remarkable,—the Kilsby Tunnel near Rugby, 2,435 yards in length; the Standedge Tunnel, of 5,300 yards, between Manchester and Huddersfield; the Britannia Tubular Bridge over the Menai Straits; the new harbour works at Holyhead; and the splendid lattice-girder bridge over the Mersey at Runcorn. Nor can we make more than a passing allusion to the company's wonderful locomotive and steel works at Crewe which cover an area of nearly 100 acres and form one of the sights of manufacturing England, nor to the extensive carriage and wagon works at Wolverton and Earlestown, at the latter of which a new wagon is turned out complete every thirty minutes. To such of our readers as may be interested in the construction, maintenance, and working of a great railway system, we can give no better advice than to bid them take as their subject of inspection and inquiry the London and North-Western.

#### THE ANNEXE TO THE CHARING CROSS HOTEL.

THIS lofty but otherwise unpretentious building, architecturally speaking, is nearing completion. More than three years ago we gave some particulars of the structure, which was then recently commenced, but the Mansard roofs then contemplated have been replaced by a flat roof of very excellent construction and material. It is between six and seven thousand square feet in area, and the covering is of asphalt, three-quarters of an inch thick, laid down by Claridge's Patent Asphalt Company, on the surface presented by a bed of concrete, carried by and embedding rolled iron joists, on Dawney's system. The building is six stories high above the ground-floor, and the roof, which is surrounded by a massive Portland stone coping carrying an iron railing, would afford a very pleasant promenade for smokers on summer evenings. The whole of the floors are fire-proof, consisting of rolled iron joists and concrete, on the same principle as the roof, the only difference being that the latter is covered with asphalt. The annex is connected with the main building by a light and not unhandsome iron bridge crossing Villiers-street, but has also a separate staircase and entrance of its own. A notable thing about this staircase is that it is fire-proof. The steps are of Portland cement, mixed with a little sand, and cast in moulds so as to give a moulded soffit, which has a very good effect. This is, we believe, the idea of the architect, Mr. John Fish. The treads, we should add, are covered with slabs of Portland stone, and the risers with red tiles. Externally the building is of yellow brickwork, with Portland cement dressings to the windows,—for the most part, at least,—for, as will be seen by the passer by, the dressings of the windows of the ground-floor, up to the level of the springing of the arches, are of stone, and we are informed that, but for the intervention of the masons' strike, the whole of the façade would have been executed in Portland stone,—no inconsiderable job. One or two features, such as the coping and the cornice, have, however, been executed in stone. The contractors are Messrs. Lucas Brothers, and it is needless to say that the materials and workmanship are good. Mr. George Baker has acted as general foreman to the contractors. The annex, the cost of which will be about 40,000*l.*, will contain about 130 rooms, exclusive of public-house, house-keeper's apartments, and basement.

**Buda-Pest, Hungary.**—The erection here of some large Government buildings is contemplated, and designs will probably be invited in competition. Some discussion is taking place as to the desirability or otherwise of making the competition international.

#### AN IMPROVED MODE OF WARMING AND VENTILATING.

An apparatus which provides for the admission of fresh warm air, instead of cold, into buildings, is manufactured by J. Weeks & Co., of King's-road, Chelsea, and is known as "Weeks's one-boiler low-pressure apparatus." The boiler is tubular, and the connexions are so arranged that any number of rooms, from two or three up to fifty or more, can be warmed, and the whole or any number worked together or separately as required.

To avoid the expense of excavating channels, building walls, and casting gratings to cover

just above the level of opening A, also closed at pleasure by a flap. This arrangement serves as a warming apparatus and ventilating apparatus combined; thus, in the summer, when the warming apparatus is not in use, the flap A is closed and the ventilator B remains open. The result is that cool fresh air enters at B, passes up the cavity, through the grating C into the church above the heads of the congregation. In addition to this, the current of air would naturally follow the direction acquired in passing through the cavity for some height in the church, as shown by the arrows, and then disperse into a number of small currents and descend imperceptibly; thus avoiding the

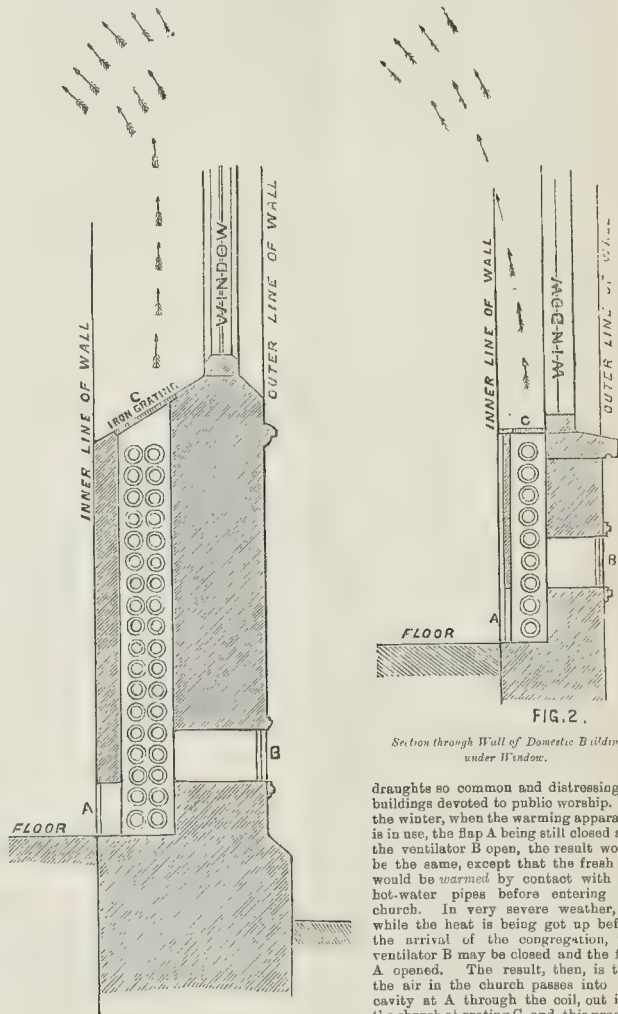


FIG. 1.—Section through Church Wall at Window.

the pipes, they adopt the plan, when a new building has to be erected, of recommending that the window-recesses, instead of starting from the line of the window-sills as usual, should begin at the floor level, and that the recess between the level of the sill and the floor should be filled with a coil of pipes. The above sketches illustrate this.

Fig. 1 shows a section through the outer wall of a church, at a window. It will be seen that the wall below the window-sill is built hollow, and that the recess thus formed is filled with hot-water pipes. The opening at the top may or may not be covered by an iron grating, C. A is an opening into the church, closed at pleasure by a wooden flap. B is an iron ventilator

draughts so common and distressing in buildings devoted to public worship. In the winter, when the warming apparatus is in use, the flap A being still closed and the ventilator B open, the result would be the same, except that the fresh air would be warmed by contact with the hot-water pipes before entering the church. In very severe weather, or while the heat is being got up before the arrival of the congregation, the ventilator B may be closed and the flap A opened. The result, then, is that the air in the church passes into the cavity at A through the coil, out into the church at grating C, and, this process being continued, the church becomes warmed with great rapidity.

Fig. 2 shows the section through the wall of a school, institution, or any domestic building at a window on any floor or landing. The same description applies to this as to fig. 1, except that instead of the wall being built with a cavity, the window recess is carried down to the floor, and the pipes are covered by a wooden case. An arrangement for cleansing the air admitted would seem to be desirable.

**The Institute of Art.**—The Council of the Institute of Art, 9, Conduit-street, have decided to open the exhibition to the public, free of charge, during the remainder of January.













# The Builder.

Vol. XL. No. 1699.

SATURDAY, JANUARY 15, 1891.

## ILLUSTRATIONS.

Principal Entrance of the Palace of San Telmo, Seville, Spain: A.D. 1734 (Double-page Engraving) .....	70
The Sturges Pavilion, Belle Vue Hospital, New York (Plans, 77).—Messrs. D. & J. Jardine, Architects .....	72
North Wing of University College, London, erected from the Designs of Professor T. Hayter Lewis (Double-page Engraving).—Messrs. Perry & Reed, Architects .....	74

## CONTENTS.

Primitive Builders .....	61	University College, London .....	81	Proposed International Sanitary Exhibition .....	84
Spring Gardens .....	62	A Word for the Little One .....	81	A Surveyor's Problem .....	84
Dwelling House: Ventilation, Lighting, and Warming—The .....	62	Architectural Association .....	81	Quantities .....	84
Parkes Museum of Hygiene .....	63	West London School of Art .....	82	Venice to the Rescue .....	84
Greek Sculpture of the Age of Pericles: the Works of Pythagoras, .....	63	Pontefract and its Town-hall .....	82	The Origin of the Architectural Association .....	86
Myron, and Polykleitos .....	63	Sanitary Science in its Relation to Civil Architecture .....	83	Portland Cement v. Lime .....	86
The Patent Laws in Various Countries .....	66	Ventilation at the Custom House .....	83	Mil Building .....	86
The Principal Entrances of the Palace of San Telmo, Seville, .....	68	Extensive Storm Sewer Works in South London .....	83	Vatortum .....	86
The Sturges Pavilion, Belle Vue Hospital, New York .....	68	Wynnan's Almshouses, Rector .....	84	Boulton-stones as Grave-stones .....	86
Society of Painter-Dealers .....	68	Competitions .....	84	Miscellaneous .....	86

### Primitive Builders.

N tracing, on the surface of this "wide, wide world," the early struggles of the human race, how scant and few are the materials which the anthropologist can find on which to build his theory of primitive life centuries before the Christian era. Rude fragments of flint and bone implements hardly distinguishable from the chips of nature's workshop,—the refuse of the banquet of a semi-carnivorous savage,—or the shell heaps of the primitive fisherman, are the few records which man can obtain on which to found his idea of the life of his primitive ancestor. If, in these rude mementoes of primitive man, the student of the human race can find some basis

for his theory of the manners and customs of his remote ancestor, how much more will he value such records as are now accessible from the buried cities of that home of the earliest emigrants in the plains of Chaldea. The rude flint and bone implements, the *débris* of caves and "kitchen middens" were but as it were scattered and fragmentary pages of the "book of man"; the buried treasures of Babylonia furnish huge tomes which teem with every detail of the daily life of the prehistoric citizens of the land of Nimrod. Nor is this all: the very letters in which these annals are written are pictures, in which the primitive artist has handed down to posterity the counterfeit presentment of men and manners in Babylonia centuries before the Christian era.

The art of writing or "of recording events and sending messages" certainly was in its earliest stages pictorial, in the employment of pictures expressive of objects or ideas associated with the objects represented. In almost every portion of the globe where there has grown up a civilisation, we find traces of this early mode of transmission of speech. In Egypt the employment of the hieroglyphics as purely pictorial and not as phonetic characters must have been in vogue at a remote period, but how distant that epoch was can only be in some degree imagined when, at the time of the fourth dynasty, which Dr. Brugsch places thirty-seven centuries before the Christian era, the writing had already become simplified down to some forty phonetic signs. Still, however, the existence of numerous pictorial characters employed as determinatives,

or as ideographs, clearly indicated that at one time the ruder and more complicated mode of expression was employed. The discovery of the monumental records of the tribes of North Syria and Asia Minor comprised in the Hittite confederation shows that in the slopes of the Taurus and Armenian mountains there had been invented by the primitive inhabitants a mode of graphic communication of a pictorial character. The complicated mode of writing in use among the inhabitants of the Celestial Empire has had its basis in primitive picture-writing, and in some of the more archaic inscriptions the pictorial character is very apparent, but the exigencies of cursive writing have obliterated all traces in most of the numerous characters of the language. In Mexico, and among the South and North American Indian tribes, this mode of giving expression to thought or speech is found.

The regular and beautifully cut or moulded characters of the cuneiform syllabary which serve to record the mighty deeds of Sennacherib or Sardanapalus were not the first beginnings of the writing of the inhabitants of Mesopotamia. The researches which have been made into the origin of the cuneiform or wedge writing in use in Babylonia and Assyria show that, before the emigrants had started from their primitive home under the slopes of the mountain of the world in the north, they had already begun to give pictorial expression to their language, and in this primitive script we find the origin of the more regular and beautiful writing of the later empire, and from the uncouth combinations of dashes, wedges, and strokes, we are able to learn many details of the daily life of these "pilgrim fathers of Babylonia." By tracing the characters of the more developed script back to their elementary and pictorial forms, we are able to obtain a rude series of pictures of the objects which surrounded the artist who in primitive time gave graphic expression to his thoughts.

In our consideration of the life of the primitive builders on the plains of Chaldea, we are greatly aided by the numerous vocabularies and lists of synonyms which have been drawn up by the scribes of the court of Nineveh, and which enable us to see the various ideas which were grouped round the ideographic and once pictorial characters. In our studies there is no better starting-point than the house or home which formed the dwelling of the primitive settler in the plains of Chaldea. Among the characters which are used ideographically to represent the house or home we have a series which furnish an interesting history of the origin and development of the dwelling-place. The first and earliest idea is that of "hole," "hollow," or "cave," which carries us back to the mountain home where the primitive man was a troglodite or cave-dweller. This notice of the early home of the Akkadian mountaineer prior to his settlement in Babylonia being caves and holes in the rocks, finds an interesting confirmation in the

important discovery made by Mr. Lortet, near Tyre, of a prehistoric settlement with the traces of a cave-dwelling population. In these people we may recognise the Horites or cave-dwellers of the Scriptures (Gen. xiv. 5, 6). After their migration from the "mountain of the East" to the low alluvial plains of Shinar or Chaldea, the settlers found no such natural resting-place as the caves or hollows made by the giant hand of time; they were compelled to construct the house. This change of circumstances gave rise to new ideographs as expressive of the home. The house was now represented by a rude picture of a "wattle and dab" construction, or by a combination of two characters, the one meaning "an object," the other "to build," the house became "that which is built," and the father was "the builder," or "he who makes the resting-place." But for a long time the house was only a construction of wood and reeds, covered with the clay from the river's bank. This fact is illustrated by a bilingual legend in the British Museum, in which the "brick house" is especially specified as the place of confinement, the prison. The tablet is a code of domestic laws in which the statutes of social life are recorded, and the section in question reads, "If a father to his son shall say, Thou art not my son in the house, (even) in the brick house they shall enclose him." There is one very interesting inscription in the Museum collection, which is a special hand-book of phrases relating to domestic life, written in the two languages of Babylonia, Semitic and Non-Semitic, and as it relates specially to the foundation of a private domain, we will see what information we can gather from it regarding the house and home life in the land.

"The foundation he has obtained. In this year, in the sixth month, he has founded it."

The ideographic sign here used for foundation represents the idea of strong land, firm ground, in distinction from the loose marsh land.

The rest of the domain is then laid out:—

"The trenches for the walls of his abode he has made. The circuit he has enclosed. In the field water from buckets he has poured out. The field with the hoe he has broken up. The water trenches he has arranged, the *sakab* he has balanced. The waters have been poured out."

11.

In the month Chislen the making on the 30th day with rejoicing.

The door and the listel they are established. As for the house, the woodwork of the house and the walls of the house.

The strong woodwork he has made firm. In the resting-place from the field, which in this house he has established."

In the interior a separate portion of the house he has deducted.

The construction which he has appointed. Over it he watches.

For himself the portion he has made."

This short fragment, which has been pre-

\* Literally, carpentered.

† Made small.







cannot tell whence it cometh or whither it goeth," until we have traced to its source the provocative cause, which will be found to arise from variations in humidity and temperature, and, consequently, density and pressure of the heavier against the lighter and brighter atmospheres, with which the former impinges against the latter. Thus the draughts in a room are the result of the pressure of the cold air of the street or passage, in its struggle to get to the warm air of the room, and particularly that part of it from which the heat is generated and projected. Where two rooms are of the same temperature, the air is stagnant; that is to say, no movement of the air from one to the other will take place by the opening of a means of communication between them. It is obvious, therefore, that if the whole of the interior of a house were equally warmed, there would be no change of air between one part of the house to another; and the building would be in the most favourable condition for the introduction of the means of special ventilation already described. Each room might be separately lighted, warmed, and ventilated, and yet the same temperature might be maintained, but with the difference that there would be no stagnation, but pure fresh air warmed as it entered for free inspiration, and withdrawn as by expiration or combustion it became impure. "Thou hast seen it seldom."

Now, this Utopia is not to be attained if the hall and passages and the staircases are not considered in the general warming of the house. For myself, I am much impressed with the economy in heating an interior which comes from first warming the lungs, so to say. The best salvation from the wasteful consumption of fuel is the withdrawal of the cause of the draughtiness of rooms, arising from the otherwise uncontrollable difference in temperature between the sitting-room and the hall, by the introduction of a good hall-fire or other system of warming the entrance-hall and staircase.\*

#### GREEK SCULPTURE OF THE AGE OF PERICLES.

THE WORKS OF PYTHAGORAS, MYRON, AND POLYCLÉTUS.

PROFESSOR C. T. NEWTON commenced a course of lectures on "Greek Art in the Age of Pericles," on Friday, the 7th inst., at University College, and had a crowded audience. He commenced by saying that he had that day to talk about three artists who immediately preceded Phidias, not, perhaps, literally with reference to date, but in style. They led up from the transition period to what we believed to be, and what the ancients considered to be, the perfection of Greek sculpture, as exemplified in the works of Phidias. The first of the artists of whom he had to speak was Pythagoras, who was not uncommonly called Pythagoras of Rhegium, the fact being that, as had been ascertained by an inscription found at Olympia, he was originally a Samian artist, probably belonging to some colony of Samians in Greece. He was the earliest of the three artists with whom the lecturer had to deal that day, his date falling some time between 500 and 460 B.C., as was proved by the dates of certain statues of Olympic victors which were made by him, and of which Pausanias gave the names. There was an interesting, though, unfortunately, too brief, notice of Pythagoras of Rhegium in Pliny, who said that he was the first to render more like nature the veins and the muscles, also the hair, of the human form, as represented in his statues. He took more pains, and got out of the previously conventional way of representing these details. In short, he put more life into his figures. He and the other two artists of whom the lecturer intended speaking on that occasion were workers in bronze. He believed there was no evidence that they ever worked in marble. Pythagoras made several statues of athletes, and also a figure of a lame man limping owing to an ulcer in his foot, and in which, according to the testimony of the ancients, the agony of the limping man was admirably expressed in the face of the statue. There was other testimony in ancient writings to the effect that Pythagoras was the first to impart to his statues the qualities of rhythm and symmetry. Unfortunately we had no extant samples of his art that we could appeal to with certainty as to their identity. Within the last few weeks there had been published the first number of the "Journal of

Hellenic Studies," and in it there was a remarkable article written by Dr. Waldstein on the art of Pythagoras, with special reference to a certain statue attributed to him, now in the British Museum. That article contained a great deal that was very suggestive, some things which were new, and other things which, though old, were put in a more attractive form than that worn by them in the German originals. At the same time, there was some amount of what could only be characterised as adventurous conjecture. The statue in question was one of the best-known of the Museum statues, but as it was his (the lecturer's) special desire to draw attention to it, he had had a cast of it brought before them. The statue itself occupied the most conspicuous place at the end of the Archaic Room of the Museum. The lecturer stated that in a former discourse he had drawn particular attention to that same statue, especially contrasting it with two others of a much earlier and ruder period placed on either side of it. As, however, it was difficult to recall all the features of works of sculpture, however well known in a general way, he had had casts of all three statues brought to illustrate his remarks. Professor Newton then proceeded to point out certain characteristics of the supposed statue by Pythagoras which made for or against Dr. Waldstein's theory. The statue was generally called an "Apollo," and it certainly had a strong likeness to Apollo, and of late other arguments had been adduced to show that it was an Apollo. The statue in the British Museum was one of three marble replicas, one being in the Vatican Museum at Rome, and the other had been discovered in recent years in the Dionysian Theatre at Athens, in very close juxtaposition with an *omphalos*, a characteristic of the Delphi Apollo. In the British Museum there was a head, very similar to that of the statue in question, which came from our diggings at Cyrene a few years ago, and it had been contended by more than one German archaeologist that the statue at Athens stood on the *omphalos* found near it, it being suggested that the statue was by the sculptor Calamis. Dr. Waldstein objected to the notion that the statue ever stood on the *omphalos*, and asserted that he had ascertained by actual experiments that the statue never could have stood where the marks of feet were to be seen on the *omphalos*. Again, Dr. Waldstein pointed to the peculiar head-dress of the statue, which was the same on all three replicas and on the head found at Cyrene, the hair being bound up in a peculiar manner by a braid. Dr. Waldstein contended that Apollo would never have been represented with his hair arranged in that way, and that, in fact, the head-dress and the figure were those of an athlete. But he (the lecturer) knew of undoubted examples of Apollo, and even of Hermes, with their hair braided in the same manner, so that Dr. Waldstein's assertion was a hazardous one. Further, Dr. Waldstein said that the figure was not characteristic of Apollo, but of an athlete; but it might very fairly be questioned whether the artists of that time knew how to discriminate and to express their discrimination between the purely ideal type of the god and the less ideal type of the man, although the distinction was undoubtedly very clearly marked in later times. Therefore, he thought Dr. Waldstein's arguments against the possibility of the statue being that of an Apollo were not conclusive. But there was another set of arguments which he used with great skill,—arguments in favour of the statue being that of an athlete. No one could deny that the figure was one eminently suitable for the representation of an athlete. Again, there was a particular adjunct at the side of the statue which Dr. Waldstein explained on the theory that the figure was that of an athlete,—and no one else had been able to explain it on any other theory. The statue was supported on one side by the trunk of a tree, and extending down one side of this trunk was a long projecting ridge, which, Dr. Waldstein argued, was a strap or thong,—and, said the lecturer, it was certainly more like a thong than anything else. Dr. Waldstein urged, further, that the ancient pugilists of the time of Pythagoras wore round their wrists certain thongs, which were bound round the knuckles. These thongs were called the *himantes*, and were to be seen constantly represented on the Greek vases. In confirmation of Dr. Waldstein's theory, he (the lecturer) was bound to say that at the side of the thong was something which Dr. Waldstein had not noticed, but which might very well be the end of the plaited thong, with

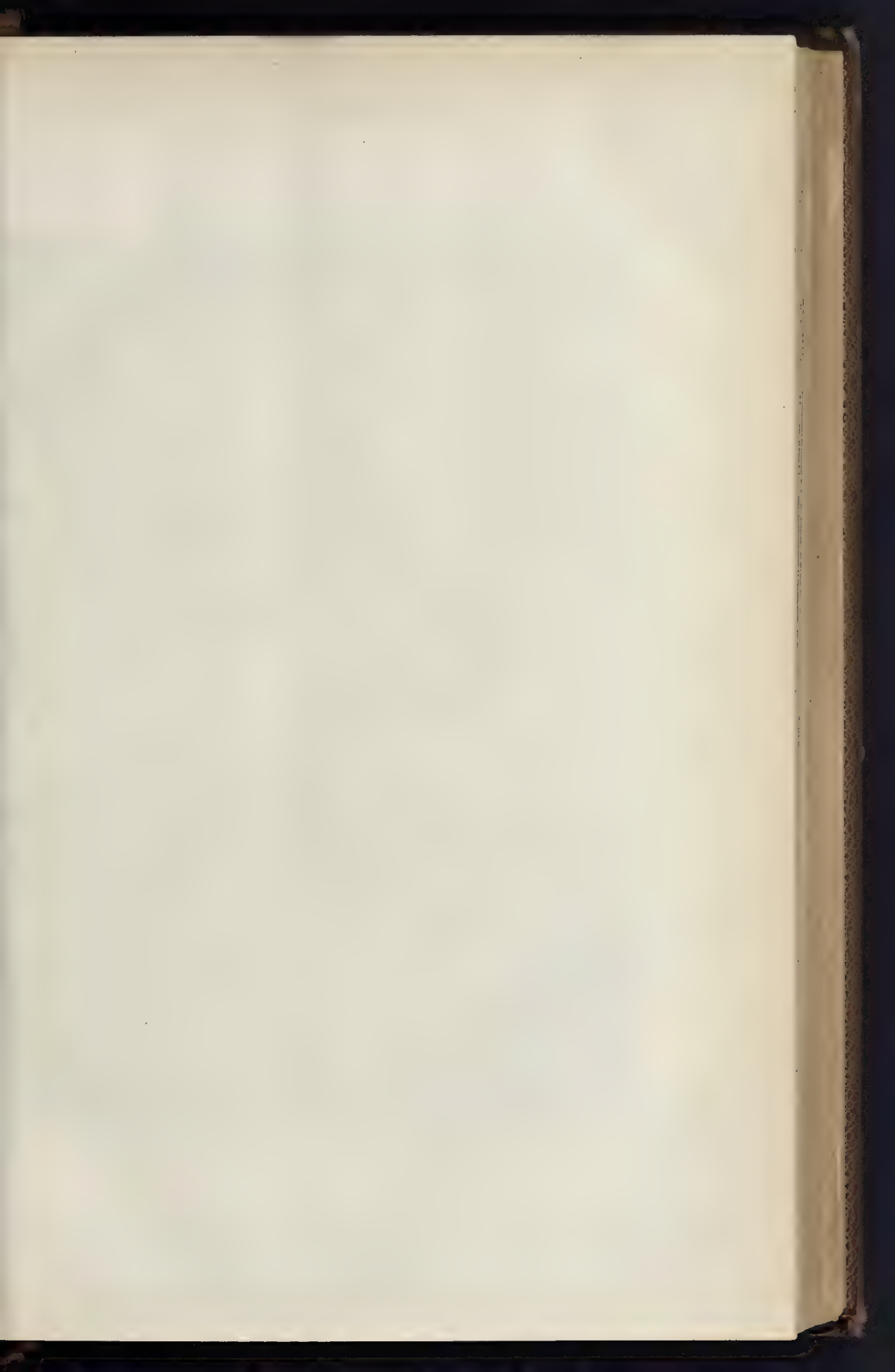
two projections which doubtless originally supported some slender object. Dr. Waldstein, it seemed, in looking over the list of works attributed to Pythagoras, found that he made a statue in bronze of a certain Euthymos, a pugilist, who gained three Olympic victories, and who was, in consequence, the subject of special honour and even of worship. Pausanias, in describing the statue, said it was one specially worthy of notice, and he told us the story that there were two of these statues,—one at Locri, in Southern Italy, and the other at Olympia, and that they were both struck by lightning on the same day. That there was such a statue at Olympia there was no manner of doubt, because the base of one, with the name of Euthymos on it, had been found in the recent German excavations there, but unfortunately the upper plinth was wanting, so that we were able to get from it no suggestion as to the position of the feet of the statue which occupied it. The characteristic of the style of Pythagoras was a greater power of rendering the organic form as apparent to us on the surface of the human form, which seemed, as it were, to be presented with its skin on. This representation of the skin it was, according to Pliny, the special merit of Pythagoras to have first rendered. In order to understand exactly what Pliny meant it was only necessary to compare the statue in question, presumed to be by Pythagoras, with the two ruder statues which are placed next to it in the Archaic Room at the British Museum, which, like the figures of the pediments of the Æginetan Temple, had a sort of skinned appearance. With regard to the disposition of muscles and veins on the surface of the body, Professor Marshall had assured him that the reputed statue of Apollo was fairly correct in those respects. Dr. Waldstein argued that the statue, in its anatomical details, represented exactly the stage of art known to have been attained by Pythagoras, and Professor Newton said he was bound to say that if it was quite certain from other evidence that it was a statue by Pythagoras, the whole character of the anatomy of the statue would very well correspond with Pliny's description, except, perhaps, in regard to the manner of rendering the hair. Dr. Waldstein further commented on the characteristics of rhythm and symmetry attributed by Pliny to the works of Pythagoras. He took it that the difference between symmetry and rhythm was this, viz., that symmetry implied a due relationship between the proportions of the different members of the body, while, on the other hand, rhythm marked the perpetual changes, the flow, as it were, of surface caused by the constant modification of forms from the natural movement of the body; and where the muscles acted with a certain abruptness, and where there was no continuity of line marking the modifications of form that took place in action, there the artist attained nothing better than the Æginetan figures. The reputed statue of Apollo would certainly answer fairly well to the description of rhythm and symmetry ascribed to the works of Pythagoras by Pliny. With regard to the adoption of Dr. Waldstein's theory, Professor Newton said he felt he must suspend his judgment, for he felt that the theory was not quite sufficiently made out to be accepted. It might be said to hang on that one thing, and the question was whether the thing would prove strong enough to bear so great a weight. He had no doubt that there would soon be forthcoming, from the pens of young and enthusiastic German archaeologists, some dozen dissertations on the theory, some for and others against it. Passing on to notice the second of the three sculptors to whom the present lecture had reference, Professor Newton said that Myron, like Polyclétus and Phidias, was a pupil of Ageladas of Argos. He was a Boeotian, and was said to have competed for a statue with Pythagoras, and to have been beaten by him. His date must, therefore, be put at least as far back as 460 B.C. He was probably a little earlier than Phidias, and, as far as we knew, worked exclusively in bronze, and there was no doubt that he was, in the eyes of the ancients, one of the great early masters in that material. We had a considerable list of his works,—twelve or thirteen,—and among them were two or three which attracted the special notice of the ancients, not merely of the Roman critics, but of the poets; indeed, it might be said that Myron was the first of the great sculptors of antiquity whose fame had come down to us, not merely in the casual notices of Greek or Roman critics, but in the writings of the poets. The Anthology was full of epigrams

\* To be continued.









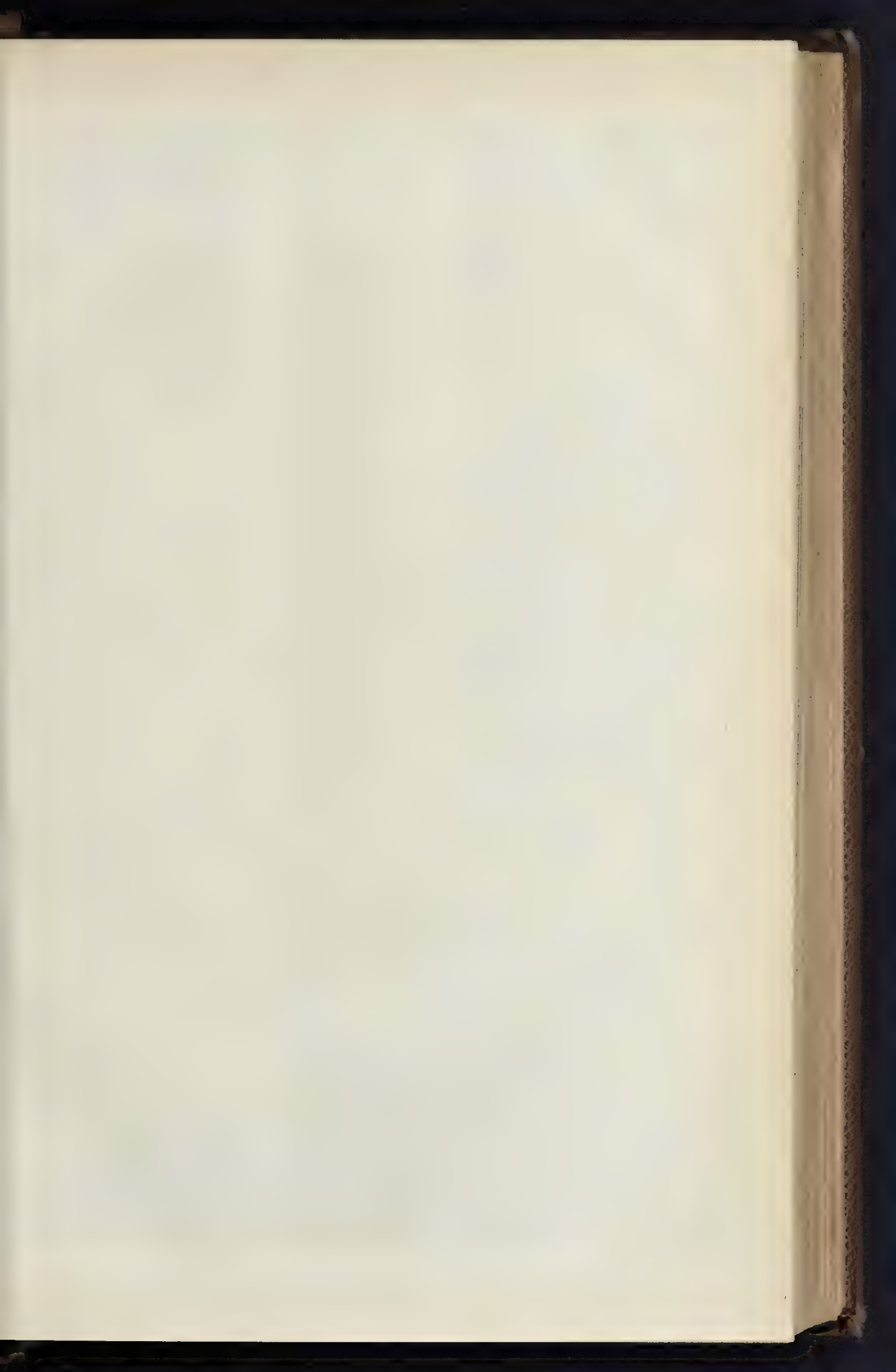
THE BUILDER, JAN. 15, 1881.



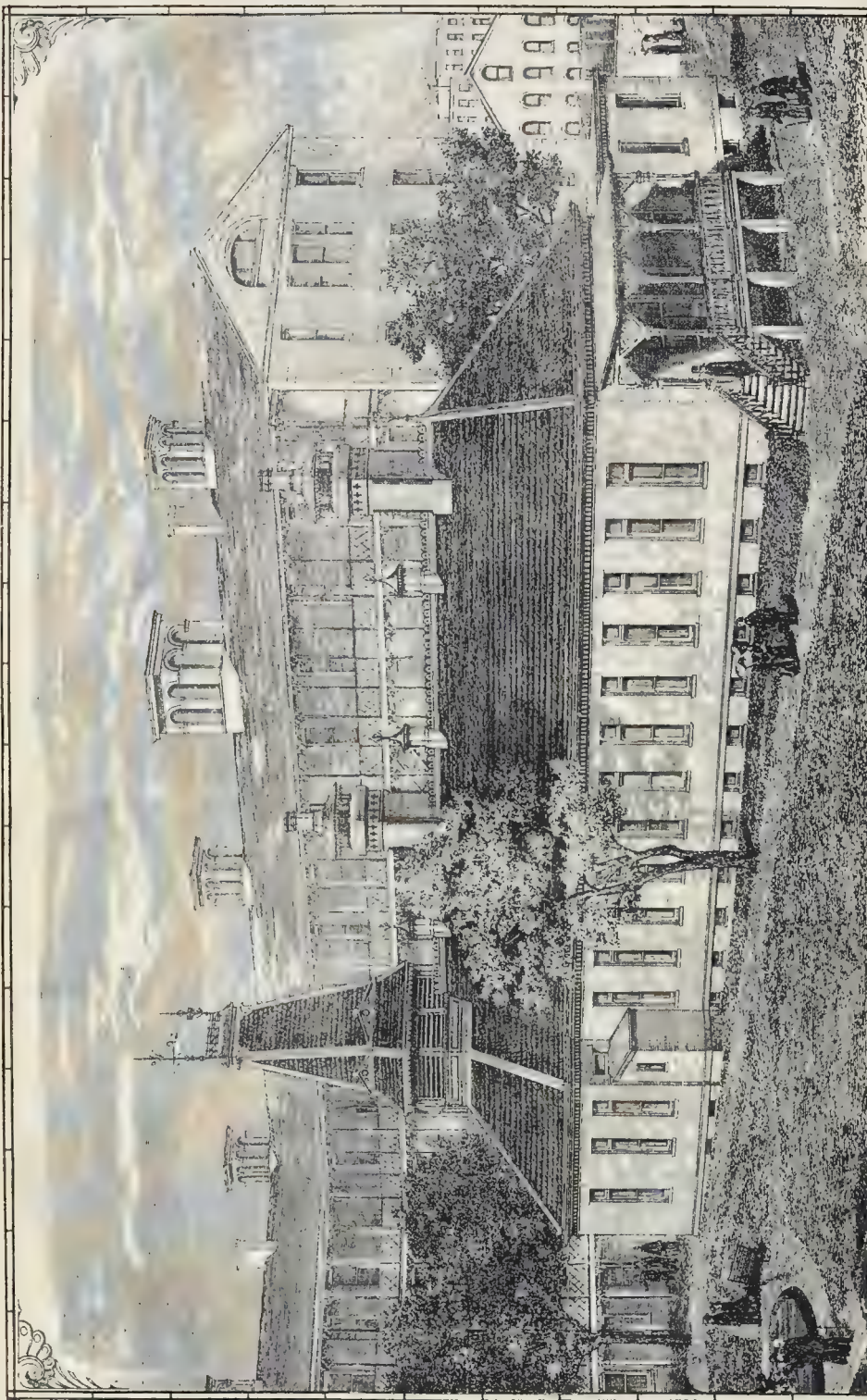


PRINCIPAL ENTRANCE OF THE PALACE OF SAN TELMO, SEVILLE, SPAIN.—A.D. 1734.





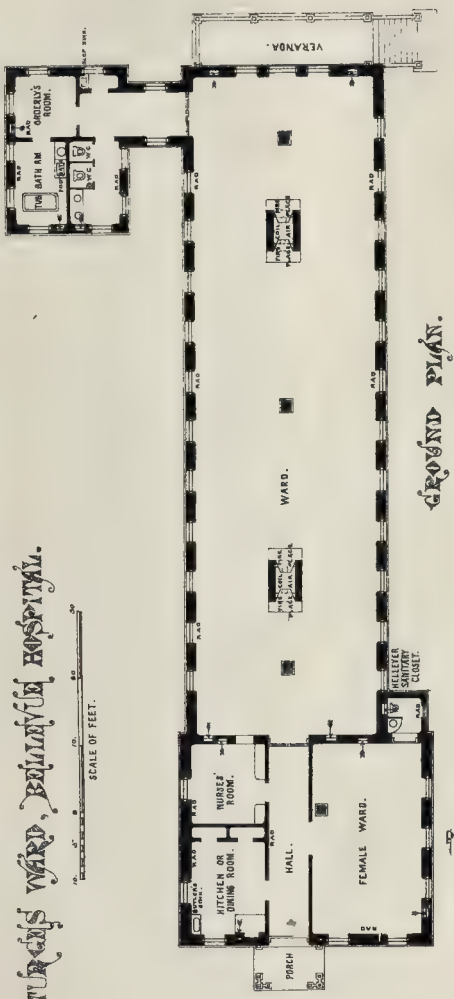
THE BUILDER. JAN. 15, 1881



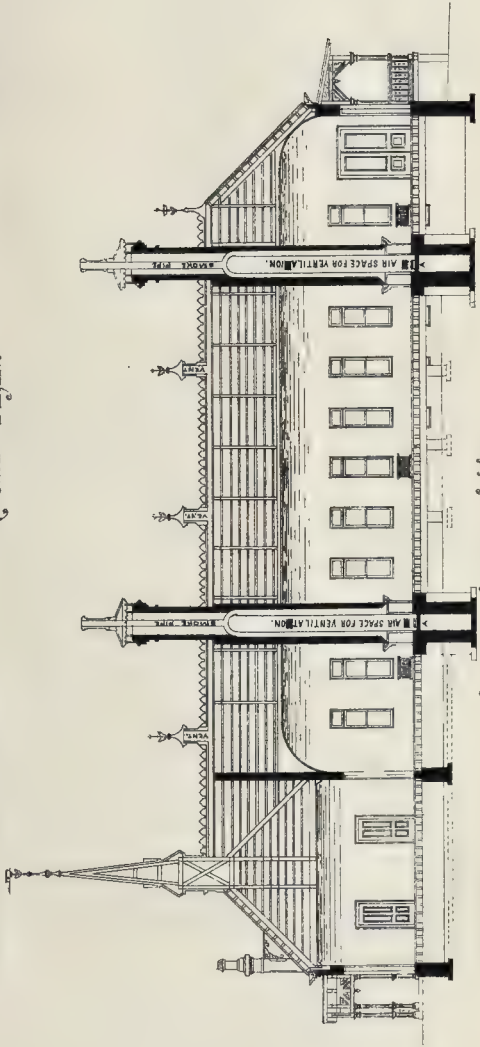
J. & J. Jardine, Architects.  
1201 Broadway, New York

SURGICAL PAVILION OF BELLEVUE HOSPITAL

# STURGES WARD, BIRMINGHAM HOSPITAL.



GROUND PLAN.



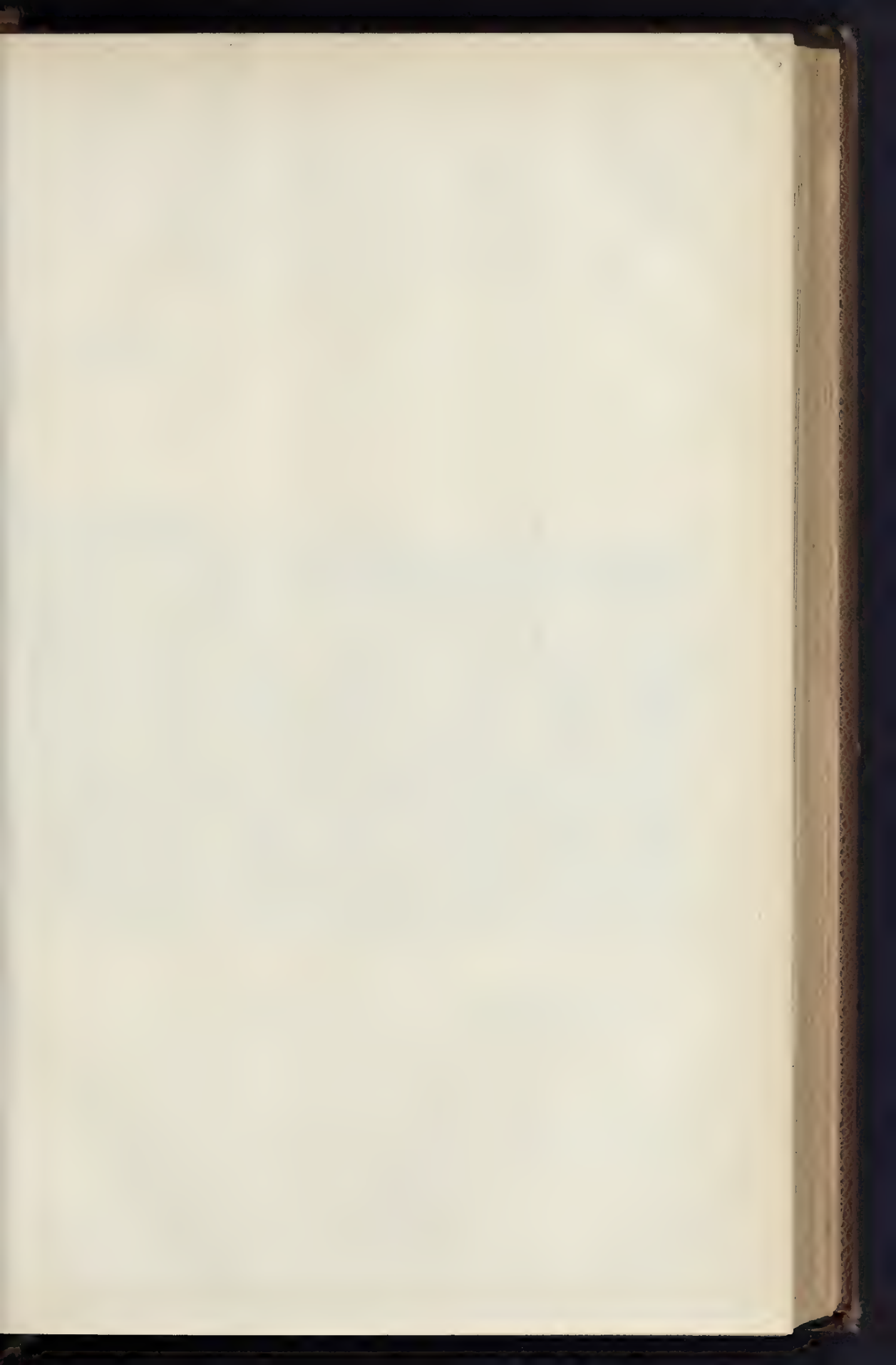
LONGITUDINAL SECTION.

A. A. STEAM COIL.

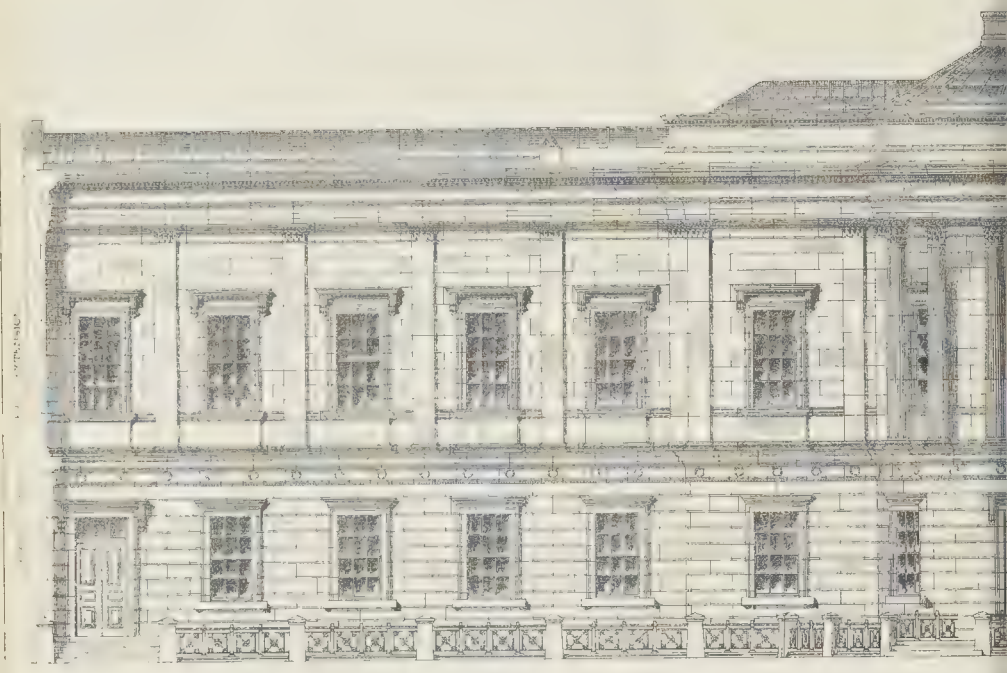
Whitman & Bass Photo Litho 238 High Holborn

Whitman & Bass Photo Litho 238 High Holborn





WINDFESTIVAL 2011



PROFESSOR OF

JOHN HENRY & REED, ARCHITECTS



DESIGN OF  
BRIDGE BUILDING



OLD MAIN BUILDING

DESIGN OF  
BRIDGE BUILDING

SI

M<sup>r</sup> W. BRASS, CONTRACTOR.

20 40 60















# The Builder.

Vol. XL No. 1091

SATURDAY, JANUARY 22 1891.

## ILLUSTRATIONS.

Purbeck House, Swanage (Plan, 105).—Mr. G. R. Crickmay, Architect.....	96
"Evelton," near Lymington, Hants (Plan, 105).—Mr. G. R. Crickmay, Architect.....	98
English Art Wood-Work at the Melbourne Exhibition.....	100
St. John's Cathedral, Newfoundland (Plan, 133).—The late Sir G. G. Scott, and Mr. Gilbert Scott, Architects.....	101

## CONTENTS.

Shaking and Popular Taste.....	87	The Birmingham Corporation and Employment of Artistic.....	100	To Persons about to Build.....	111
The Campaign against Preventible House-Misery.....	88	Paris.....	107	The Parker Museum of Hygiene.....	111
Drawings of Ancient Embroidery.....	89	His Majesty's Surveying of Companies of Lines: Bambers.....	107	The Architectural Exhibition and the Architectural Associa- tion.....	112
The Reported Murder of Pauline.....	90	Island: Civil, and Mechanical Engineers' Society.....	108	Warning and Ventilation.....	112
Attended Lateralities with the Road and River Trade of London.....	90	A Storage Archaeological Journey.....	108	Isolation and Conduction.....	112
Extension of University College, London.....	91	Design for Goldenfist's Work.....	110	Mill Building.....	112
Sanitary Science and Civil Architecture: The Royal Institute of British Architects.....	92	Building in Trinity District, Edinburgh.....	110	Surveyor's Problem.....	112
Dwelling Houses: Ventilation, Lighting, and Warming: The Parker Museum of Hygiene.....	93	Improvements in Manchester.....	110	Worthy Workmen.....	113
"Evelton," near Lymington, Hants.....	93	Liverpool Architectural Society.....	111	Architects' Actions: Hancock's, Baker & Son.....	113
Purbeck House, Swanage.....	99	Southport: Two Hall Sheds.....	111	Employers' Liability Bill.....	113
St. John's Cathedral, Newfoundland.....	99	Vicars Town Hall.....	111	The Fire at Mr. George Mitchell's.....	113
English Art Woodwork at the Melbourne Exhibition.....	100	Obituary.....	111	Books: Smith's British Manuscript Portraits (Gothic).....	113
		A New Building Scheme.....	111	Vancouver.....	113
		Unsanitary Houses without Owners.....	111	Woodhouse.....	113



### Etching and Popular Taste.

HE proposed formation of a society of etchers, mentioned in our last, is a natural result of the gradual progress of his art in England of late years, while at the same time it does not come at all too soon in regard to the desirability of making the outer world better acquainted with etchers and etching in England. In modern days the art of etching has been till very recently an unfamiliar form of art in this country. Its home has been chiefly in France; and so little has it been publicly recognised and understood on our own shores, that there are still to be met many people, not uneducated, who will apply the term "etching" to mere pen-drawing on paper, without any

idea that they are confounding terms, and applying to a very ordinary process of amateur amusement the term properly belonging to a very delicate form of art, needing above most others the artistic spirit and the artistic hand to evoke its highest qualities, or even to make much of it at all. Nothing surprises such persons more than to be told peremptorily, as they are sure to be told if they are in the company of an etcher or an amateur of etching, that they are giving to an ordinary pen-drawing a title to which such a work, however elaborate, has no right; and nothing (naturally) annoys etchers more than to hear the proper name of their art misapplied in this way.

We need some decisive action by which the peculiarities and powers of this art may be brought more home to the public mind. Mr. Hamerton's valuable and very complete work on the subject furnished the means, some years ago, for every one who wished to acquire some knowledge of it; but such a book was not likely to be sought out and read except by those who already had some interest in the art, and wished to know more about it, or to follow it up practically. For a considerable time past etching has been a favourite means of illustration in one or two art-periodicals, but these are periodicals themselves addressed chiefly to the artistic and amateur circle, and finding their readers chiefly in that circle. Those who were well acquainted with the *Portfolio* and *L'Art* must often have been surprised to find how entirely unknown these two publications were to readers accustomed to depend for their artistic reading and

illustrations entirely on some of the older and long-established periodicals which have done such good work in their day, and commanded such a large and popular circulation. This result may be partly attributed, it must be said, to a want of sufficiently broad sympathy in the tone and style of the new artistic publications themselves. They have, and the *Portfolio* at starting had still more than it now has, the air of being addressed to and representing the views of a limited artistic clique. Like the clergyman who had reduced his congregation to half a dozen, but consoled himself with the thought that those half-dozen at least were "sound," these publications had the air at least of assuming a specially esoteric character, and of being satisfied with the attention and encouragement of those who concurred in their views. It is partly, we imagine, owing to this that, in spite of the really rather large use made of etching in the illustration of these periodicals, and in spite of the not infrequent occurrence of small exhibitions of etchings in London, there is still, in the minds of many persons, a vague idea of a kind of artistic mystery surrounding the art; and while they are willing enough to go to exhibitions of oil-paintings and water-colours, and fancy themselves fairly able to judge of these, they turn away from an exhibition of etchings as of something peculiar and only half comprehensible, and which they regard very much as a man who is not *au fait* in the mysteries of old china and its value, would regard the collection of a connoisseur in such things. He has no doubt the collection is valuable and interesting to those who have studied china, but he does not pretend to know anything about it; and etching falls into the same kind of category. At the time when the small but extraordinary collection of works by Myron was exhibited at the Burlington Art Club, we remember being asked by a worthy man with no pretensions to special artistic culture, who had just been visiting the collection, if we would be so good as to explain to him what were the qualities for which these etchings were so much admired and talked about by critics. The question was asked not in any spirit of scepticism: the inquirer, like Miss Rosa Dattle, merely "wanted to know"; but what answer could be possibly given to such a question?

The comprehension of this or any other form of art by persons of general and not special culture is, in fact (granting, of course, some inherent capacity for understanding it), the work of time and habitude, and observation, rather than of any definite teaching. What are the mechanical means employed in etching may be easily related and understood; but the appreciation of a form of artistic work unfamiliar to the mind can only be arrived at after seeing a good deal of such work, thinking about it, comparing different specimens with each other, comparing the aggregate of its productions with those of other forms of art. For the appreciation of any class of art, there is no education like constantly seeing a good deal of it in its

best and also in its less meritorious forms: for which reason we have always advocated the opening of collections of art as much as possible to the middle and lower-class public, and the formation of public galleries of art wherever possible. Granting these, education, to those who are capable of it at all, comes almost of itself, though not at once. Many who have not paid much attention to pictures till past the earlier years of their life, could probably remember how completely, though almost imperceptibly, their tastes become modified and refined upon year after year. What strikes the eye and the judgment at first is what is obvious and on the surface, what appears to show facility and finish on the part of the artist. Gradually the spectator comes to see that what at first took his fancy is after all superficial, that it is easily done and often repeated, that it is very possible to tire of it; gradually he finds out that works which have seemed uninteresting, peculiar, or repellant at first sight, really represent much more thought, a much more considerable use of means to an end, than those which commended themselves to his untrained taste. By degrees he finds out, from repeated exhibitions, what are the higher capabilities of the art as a mode of intellectual expression, what are the mere sleight-of-hand effects, which, once learned, can be repeated again and again, losing value with each repetition; and even in regard to mere manipulation, he learns to distinguish between that which is carelessly though showily done, and that into which the artist's whole labour and effort has gone. Thus by degrees a taste is formed, and a firm ground of judgment which is little liable to be deceived in the future.

Through this kind of spontaneous training a certain portion of the public has gone, for some time past, through the medium of our now numerous annual exhibitions. But through this training very few people indeed have as yet gone in regard to etching. It is still an art in regard to which there cannot be said to be any public opinion at all as yet. And the formation of such an opinion is one good result which we think may be contributed to by the action of the proposed Society of "Painter-Etchers" (about which term a word just now). The formation of the society, as we stated last week, is to be precluded by a general and representative exhibition of English etchers' work, as a means of selection of the most eligible members for the proposed society; and the society, when formed, and if successful, will no doubt hold annual exhibitions just as the Academy and the Water-Colour societies now do. While the very fact of the formation of the society will be a step towards a proper assertion of their own position in the art world by the etchers, the great opportunity which it will afford for publicly and continuously illustrating their art by exhibitions will, in itself, go far to create that more general and public appreciation of etching which can hardly be said to exist at present; it will furnish the means of a fresh

step in the artistic education of the people. We wish the movement, therefore, all success and support.

A word, as before said, as to that phrase "painter-etcher," and its significance; for it has a significance, though it is an awkward term, which would be better dropped when it has served its purpose. That purpose obviously is to draw attention to the fact that etching is something more than a medium for reproducing drawings for the purpose of illustration. We have spoken of the introduction of etching in certain publications as a favourite form of illustration; but it must be said that this is not the kind of object to which it best lends itself. In fact, impressions of etchings, properly so called, can only be used for illustration in publications which are limited as to number, and in which the appearance of a special illustration by a special day is not an object of invariable necessity. Etching is the slowest and least certain form of engraving in regard to printing copies; the one in which there is the largest percentage of faulty impressions, and in which the greatest care is required to insure successful printing. It cannot be reduced to mechanical certainty; each act of printing demanding special individual care, the impressions often varying considerably even under the same hand. But it is desirable that the public should understand that etching is not to be classed with other forms of engraving as a mere means of reproducing and multiplying a work of art. It has that value to a certain extent, and very refined and beautiful reproductions of portraits and other paintings have been made by eminent etchers, copies of which have a special value not only from their intrinsic merit of execution, but because their multiplying power is much less than that of an engraving. But the special point of the revival, as we may term it, in favour of etching, is, that it is a return to the time when engraving, of whatever kind, much more often employed the hand of the original artist, and embodied an original thought, than it has in the period when it has been chiefly valued as a means of multiplying copies. Engraving, however it may be susceptible of the hand of a master in art, has more usually employed the hands of craftsmen than great artists; it is a process involving too much of what is, at least, semi-mechanical for a great artist to devote his time to it. But it has immense value as a means of reproducing copies in great numbers, and in a permanent manner. Etching would never compete with it in this way. Etching is revived for its own sake, as a medium for the expression of original artistic thought, coupled with the advantage of the capability of a limited reproduction of copies. Hence the term "painter-etcher" emphasises the fact that those who are now bent on reviving this art are taking a stand according to which they must be classed with painters, not with engravers. The art has peculiar beauties, facilities, and delicacies of tone and expression, completely its own, and its productions may be works of entirely original power and design, to be valued as original works of art, and not as reproductions. The same stand might be taken by engraving, as we said not long since in speaking of Bewick's engravings; but there is the drawback that the mechanism is too laborious in proportion to the result to attract artists of the highest class. This is not the case with etching, which does not demand labour, but knowledge of what to do and how to do it, and above all true artistic and poetic feeling, without which it is but copper-scratching. For this very reason its more recalcitrant merits are less easily "understood of the people" than those forms of art in which execution is carried to a higher degree of finish and realism, and perhaps the due appreciation of a fine etching may be said to be the most delicate test of artistic taste and culture, as it demands from the spectator not only that he should see what the draughtsman has done, but that he should understand also what he has intended to convey beyond what is obvious on the surface. Some enthusiasts among etchers and critics may have a little exaggerated their favourite subject, but there is no doubt that the more popular understanding of a form of art like this cannot but exercise a refining and quickening effect upon popular taste.

The Edmonton School Board have appointed Mr. A. R. Barker, of 11, Backingham-street, Strand, London, to be their Architect.

#### THE CAMPAIGN AGAINST PREVENTIBLE HUMAN MISERY.

Few things contributed more effectively to the widespread and permanent power of the Church of Rome, some four or five centuries ago, than the aptitude displayed by her rulers for absorbing those independent forces which, if left to their own unguided energy, would have become in time arrayed against each other, or against the Papacy. This has been especially remarked in the case of the great monastic orders. A hard and short-sighted policy would have entirely arrested the great source of power that developed the mighty confraternities of the Dominicans and the Augustines, the learning of the Benedictines, and the special science of the educational ecclesiastics. In the great struggle of the present day against the physical evils of life, against all that tends to produce squalor and disease, or even against the mischief arising from ignorance and from poverty, it should be especially remembered that those who are not against us are with us. So vast is the field, and so great are the benefits which it is hoped to secure, that the aid of the enthusiast is not only to be accepted, but welcomed. There are few of us in whose veins the blood runs with such measured beat as to allow us first calmly to inquire into what is the teaching of science, and then, with equal composure, steadily to set ourselves to carry it out. On the contrary, it is men who are full of the spirit of the reformer to whom we must look to overcome the vast inertia, which, even more than open and direct opposition, arrests the progress of sanitary and physical improvement. We may not agree with them altogether. But the point is to ascertain not where we differ, but where we agree. We may think that A rides his hobby too hard, that B looks at symptoms rather than at the evils which they betoken, that C puts the cart before the horse. But admit all that, and then there remains the truth that the resultant of the energies of A, B, and C is a force operating in the right direction. And that, being the case, it is our duty to offer to each, so far as we honestly can, comfort and aid.

We have two or three of these independent energies now at work to which these remarks apply. There is that effort at providing a more nutritious bread for all classes, the importance of which was, long ago, suggested in these columns, and to which we had occasion recently to call attention (see *Builder* of 11th Dec. 1880, p. 691, "Staff of Life"). There is the effort to obtain respirable air in London in the autumnal and winter season, which called together a large and influential meeting at the Mansion House on the 7th instant. And there is the attempt to organise a sort of Guild of Health, so to speak, or association for mutual aid in the sanitary inspection of dwellings, which occupied, first the energies of a committee at the Langham Hotel, and then, at other instigation, the attention of the Society of Arts, on the evening of the 12th instant, under the presidency of Professor Huxley. We do not mention these as the only, or even as the chief, of the independent efforts to which we have referred. But they are instances which came before us within a few days,—instances in which earnest and disinterested people, without hope of fee or reward, are setting themselves to do their best to remove the evils arising from ignorance, from prejudice, or from neglect. Not only do we wish them good speed, but we are anxious to give them that encouragement which can hardly fail to result from the conviction that all these independent workers not only march under the same flag, but are, in truth, engaged in different operations which are to be combined in the same campaign,—the campaign against preventible human misery.

The remarks made by the *Times* on the Mansion House meeting, touching smoke and fog, while fairly giving a sketch of the general subject of the discussion, contain nothing that will be new to our readers, if we except the conclusion that "to drain London was a more gigantic work than to clear the air of London promises to be." We should be very glad if we could subscribe to any such encouraging assertion. To drain London was a question of pounds, shillings, and pence. It included, indeed,—or rather we should say, the still unsolved problem includes, the solution of a question towards which but little progress has been made in the last decade, namely, what to do with the offensive matter removed. It is, we think, certain that it is no proper reply to that question

to say, "Pitch it into the Thames"; nor do we consider that the removal of such a disgrace to our civilisation as that method presents can be anything but a question of time. But apart from this yet unsettled difficulty, the question of drainage was simple. From a mechanical point of view, it is merely a question of hydrauliic action, with the principles of which the engineer is fully familiar. From a social point of view, the main difficulties had been long removed before the Metropolitan Board of Works commenced the work of the main drainage system. There was no need to ask for the aid and help of every household. The work to be done was, for the most part, without the houses, and every owner or occupier was only too glad to have the advantage of an outfall into the sewers afforded to him.

With regard to smoke, the case is quite otherwise. The scientific part of the question is far from being clear. We have called attention to the elegant theory that each particle of water in the foggy air surrounds itself with an envelope of smoke, or of some of the elements of smoke. Another observer comes forward with the theory that particles of dust form the fog nuclei. Another theorist would draw down pure air from a region of the atmosphere at some height above the canopy of smoke. We do not mention these matters as undeserving of attention, but as showing how far we are from a thorough appreciation of the scientific problem of the actual formation of the special fogs of London, and of the mode by which,—expense being put out of sight,—they may be, if at all, prevented.

The social question, however, is one of far greater difficulty. How difficult it is, let any one of our readers who doubts take this method of measuring. Let him ask the first dozen housekeepers he meets their opinion as to the advantage of doing away with open fires. Let him speak of the good of all, to be attained by a little sacrifice of them on the part of each. Let him touch on the economical question,—the cost of smoke, the waste of fuel, the waste of heat when produced from the fuel, the cost of washing, the medical charges, the cost of apparel and furniture,—all those points to which, on a former occasion, we have endeavoured to attach an approximate money value. What will be the general reply?—"Yes, but we cannot give up our open fires." As long as that is the general reply, reform has a very uphill task before it, unless science show how the fire may be retained and the smoke avoided.

It is this æsthetic objection,—this immobility of habit,—which is the chief obstacle to the purification of the London winter atmosphere. It is highly desirable that all those who aim at this great object should bring this fact clearly into the centre of their field of vision. As to cost, we have no doubt whatever that economy is on the side of reform, and that a great economy. We do not say that a great economy is attainable to-day or to-morrow by the combustion of the gas of the gas companies as fuel, although even so to that we have previously brought forward some very striking figures. But we do say that the first requisite to prevent smoke is to burn smokeless fuel; and that if once it is felt that the public will use the cheapest mode of producing heat without smoke, science will soon provide them with such combustible matter as will combine the maximum of purity, the maximum of heat, and the minimum of cost. But for that to be done, the sort of family affection entertained for the blazing fire may have to be sacrificed. Here the shoe pinches. Say what we will, it is wasteful, dirty, costly, clumsy; it turns day into night. It lets you shiver as you get up, shiver as you go to bed. It is dangerous if left in, dangerous if raked out. It has every defect that a source of heat can have except one,—it gives a cheerful blaze. So long as that cheerful blaze is regarded with the same affection that one entertains for a fascinating companion, into whose pecuniary or other demerits we do not care too closely to inquire, the efforts of the smoke-reformer will be paralysed. It is not the engineer who is at fault,—it is not the chemist. Give them more encouragement, and the smoke of London will soon become a vanishing quantity; but science and economy are both mute before the love of a cheerful blaze.

The drawing-room fire, we take it, is the main defence of fog. The products of manufacturing chimneys have been to some extent amended, and no doubt improvement here is in progress. In the bedrooms and dressing-rooms,

when the weather renders fire almost a necessity, the perfect manageability of gas will, we think, render its adoption more and more the rule. As to the nursery fire, we must almost rank ourselves among the obstructive. Only on receiving the assurance of the most perfect ventilation, could we consent to the abandonment of the open fire in the nursery. And here let us bear in mind that a double system of ventilation is a necessity for the healthy use of gas in the dwelling-house. We require that the gas should be supplied with the exact amount of oxygen necessary for combustion,—neither less nor more,—as a condition of economy. This involves burning the gas in a closed system of conduits, to supply the air, and to remove the products of combustion. Nor do we think that gas ought to be burned in human abodes, either for light or for heat, unless the products of combustion are quite prevented from coming into the air of the apartment. This also is demanded by health. Plants will not live in a room in which gas is openly burnt. Are the lungs of children less sensitive than the leaves of plants? But this double need, economical and hygienic, for a closed system for gas combustion, involves the need of a separate system for ventilation. It will no longer do to trust to the cracks of doors or the loose joints of windows to remove the products of respiration. Glazed tubes must be built into the walls, and ventilators attached, and the ingress and egress of air to the living-room must be made matter of definite care, if we would at the same time burn gas and preserve health.

The kitchen fire, we take it, produces about half the smoke that comes from the ordinary dwelling-house. As to the kitchen fire, we can offer an immediate remedy,—one of which we can speak from long personal experience, and one which is remarkably free from counter-venial objections.

The kitchen fires of Pembrokeshire, Carmarthenshire, and some other parts of Wales are fed with culm, or the natural dust of anthracite coal, which may be seen in veins cropping out on the surface of the ground in the natural sections afforded by the shores of St. Bride's Bay, and in many adjoining districts. Of all coal this is the cheapest to win. It is about the purest to burn of any coal. It is quite smokeless, and yields as much heat as the best bituminous coal.

The mode in which it is burned is this. The culm, or coal-dust, is mixed with clay, in a mode similar to the mixing of mortar. The mixture is made up into balls, roughly rounded by the hand, and left under cover to dry. Persons who are very neat often whitewash these balls, which are from two to three times the size of an orange. The kitchen fire, which is never extinguished, is built up, or, as it is called in Pembrokeshire, "stammed up," with these balls in the morning, a certain time being allowed for the attaining of the maximum heat. The fire is built over the top, like a dome, with these balls, and one or more spires are left, from which a bright tongue of intensely fierce flame flickers upwards. The ordinary "poking the fire" is unknown in these culm fires, but, with proper experience, any kind of heat that the cook may require is to be obtained. Any grate will do,—the rudest construction as well as the most complex. All that is required is knowledge of the fuel, and a little forethought to know where the chief heat is to be developed, maintained, or lowered down. There can be no reason why culm fires should not be introduced into London at once. Kitchen smoke would thus be obviated. Of course, the cost of the culm would be more in London than in Pembrokeshire, but it ought not to be very high.

The *per contra*, to give every one his due, is, that there is a large amount of ash, in proportion to the coal burned, as it arises, not so much from the coal itself, as from the clay with which it is mixed. But even notwithstanding this, we apprehend that the ash to be removed in twenty-four hours from a Pembrokeshire fire would be less than that produced by a bituminous coal fire, that performed the same amount of cooking. The other evil is due to the purity and perfect combustion of the smokeless coal. It is the large amount of carbonic acid which is the product of combustion. The presence of this gas shows, indeed, that the coal has done its work thoroughly. But as it is invisible and heavy, it is apt to escape into the room, and care should be taken not to sleep in a room with a culm fire, unless there is very proper care exercised as to ventilation.

We can speak from long experience as to the convenience, economy, comfort, and smokelessness of the Pembrokeshire culm fires. We recommend those of our friends who are now seriously grappling with the problem of London smoke to take a ticket for Carmarthen, or Haverfordwest, and to spend a few hours in the study of the combustion of culm. We think the result would, in many cases, be the diminution of the coal-merchant's bill, and the discontinuance of kitchen smoke, with the additional comfort of water always on the boil. Of course, to secure all these advantages it is necessary to propitiate the genius of the kitchen. And without Welsh servants are imported with the Welsh coal, we do not attempt to undervalue this preliminary difficulty.

The drawing-room fire question, which we feel convinced is the chief problem in the smoke reform, is solved in the countries where culm is burned in the kitchen in a delightful way. There is no ordinary bituminous coal in the culm districts. Where a bright blazing fire is required, if wood is not used, the fuel employed is cannel coal. This is the very poetry of open fires. As smokeless as anthracite, if pure, it stands at the other end of the scale of coals, having a comparatively small percentage of carbon, and a large excess of hydrogen. The Wigan cannel yields only 2.55 per cent. of ash to 83.75 per cent. of carbon, 5.66 per cent. of hydrogen, and 8.04 of oxygen and nitrogen. The only objection to this coal is the cost. It is obtainable in London, being used by some of the gas companies together with Newcastle coal, when a higher illuminating power than the ordinary 16-candle gas is required. The cheapness of the culm used in the kitchen allows of a little extra cost being incurred for the consumption of cannel in the drawing-room in the good houses of South Wales.

The meeting at the rooms of the Society of Arts was held with the object of establishing a Sanitary Protection Association for London. The object of the Association is the provision, at moderate cost, of sanitary advice and supervision, in the first place, for the members; and, in the second place, for those poorer persons in whose welfare the members are interested. The Council of the Association is to be unpaid, and the officers are to have no interest in any patent or remunerative scheme. As this association is purely voluntary, it may be objected that it does not meet the real want of the case, which is the compulsory inspection of the premises of those who do not take enough interest in the matter to pay any attention to sanitary requirements. But we ought not to overlook the good effect of example, and this association will not only set good examples, but it will do something more. Just as neglect and dirt establish nuclei of pestilence, so do proper care and attention establish centres of cleanliness. The general character of a neighbourhood in which such an association took root would be changed. Improvement would manifestly spread with the spread of the association, and the rate of the doctor's bill would palpably fall. Under these circumstances it is too much to anticipate that the good example may prove contagious, and that those who come to seeer may go away to imitate? For each of these efforts there is ample room; who shall say which is most needed? Is not bad bread, of an artificial and dangerous whiteness, a greater enemy to health than even a canopy of smoke? Is the winter blackness of the fog a greater or a less evil than the invisible sewer gas, that creeps with deadly silence into a house turned spick-and-span new out of the hands of a builder, who has done a good stroke of business in being his own architect, and thus saving not only 5 per cent. commission, but perhaps another 10 or 20 per cent. in scamping? Saved, do we say? But at what cost?—at whose expense? At that of the future tenants. Robbed would be a better word than saved; or, if there be a more appropriate expression, it is one that will include a sense very closely approaching that of the word murder. Very little, if at all, short of the guilt of murder is that scamping of the arrangements for the removal of refuse from the dwelling-houses which allows of the generation or entrance of sewer gas, and its twin-born children, typhoid fever and diphtheria.

**The Institution of Civil Engineers.**—At the ordinary meeting on Tuesday, the 11th of January, Mr. Alborneth, F.R.S.E., delivered an inaugural address as president, treating mainly of canals and docks.

#### DRAWINGS OF ANCIENT EMBROIDERY.

OUR opinion of this work\* depends, in some degree, on the point of view from which we are expected to regard it. If we regard it as a collection of illustrations of curious and very interesting specimens of ancient embroidery, not very easily accessible, here brought together in a convenient form for those who cannot see the originals, it deserves the highest praise. The drawings are so beautifully and carefully executed, not only in regard to the form and colour, but even in great measure indicating the texture and execution of the original work, that they may be regarded as very nearly equal in value, for the purposes of study, to the originals. In this respect the book, on the first glance, speaks for itself. The lady who has executed the drawings here reproduced has obviously brought to her task the greatest patience and minuteness of observation in conveying faithfully all the characteristics of the work which she has illustrated; and the examples given in the thirty plates are of the greatest archaeological interest, while the execution of the coloured plates does equal credit to Messrs. Kell, the lithographers.

If, however, we are to be expected to look upon the work as furnishing the modern exorcist of church embroidery with models for study, which is the idea conveyed both by the editor's brief preface† and by the note to the publisher's advertisement, describing the book as "of great use to embroiderers, artists, and manufacturers," in that case our verdict must be given with a difference. There are some remarkably fine bits of decorative work in the book; those, chiefly, which represent the treatment of conventional foliage. The subsidiary ornament on plate 7; the floral ornament on plates 8, 11, 13, 15, 17, and some other bits of the same nature, are admirable examples of some of the finest qualities of decorative design, in regard to boldness of treatment and richness of colour, and the relation of the design to the character of the material in which it is executed. But if we turn to the figure-subjects illustrated, we can only say that, highly interesting as they are archaeologically, they are utterly unsuitable to be put forth as models for study in days when people have learned, or at all events may learn, to treat the figure in decoration with some regard to the requirements of drawing, anatomy, expression, and such other trivial considerations. Here we have apostles with their heads twisted nearly off, Madonnas as grotesque as the figures on a Chinese tea-chest, and much more expressionless; cherubim that suggest the idea of newly-hatched chickens. It is ridiculous to speak of such designs as being valuable for study, except in regard to some details of the accessories connected with the figures. These things were done in a day when figure-drawing was almost at its lowest ebb, and in a medium in which it is difficult for the best draughtsman to deal with the figure successfully. Those who produced them did them as well as they could; they did not intend to be grotesque, they worked seriously. But to reproduce the same style of thing now would not be to work seriously. It would merely be to substitute for the difficult task of creating beautiful forms the much easier one of imitating ugly ones, and calling them beautiful because they are imitations. It may be said that the theory of church decoration, among those who at present give most encouragement to it, is to be as antique as possible,—to give to a modern-Medieval church as much as possible a modern-Medieval embellishment. If so, there are, no doubt, fit models for the purpose; but if that is what modern church decorators are content with, so much the worse for church decoration.

It is a question worth considering whether it is wise at all to introduce figures into such work as embroidery. It has recently been tried on a large scale, and mainly in outline work,—in designs by artists who draw the figure well; and there is no doubt that on a large scale the material is more manageable for the representation of form and expression, and the treatment in outline gets rid of the almost insuperable difficulties in the way of anything like surface-modelling of limbs or features,—the latter especially. But, then, such a treatment loses, to a great extent, what is generally one of

\* Some Drawings of Ancient Embroidery (thirty specimens), by Mrs. Mary Barber. London: Henry S.theraa & Co. 1880.

† Mr. Butterfield undertook to see the book through the press, after the decease of the author, and has added a brief preparatory note in recommendation of it.

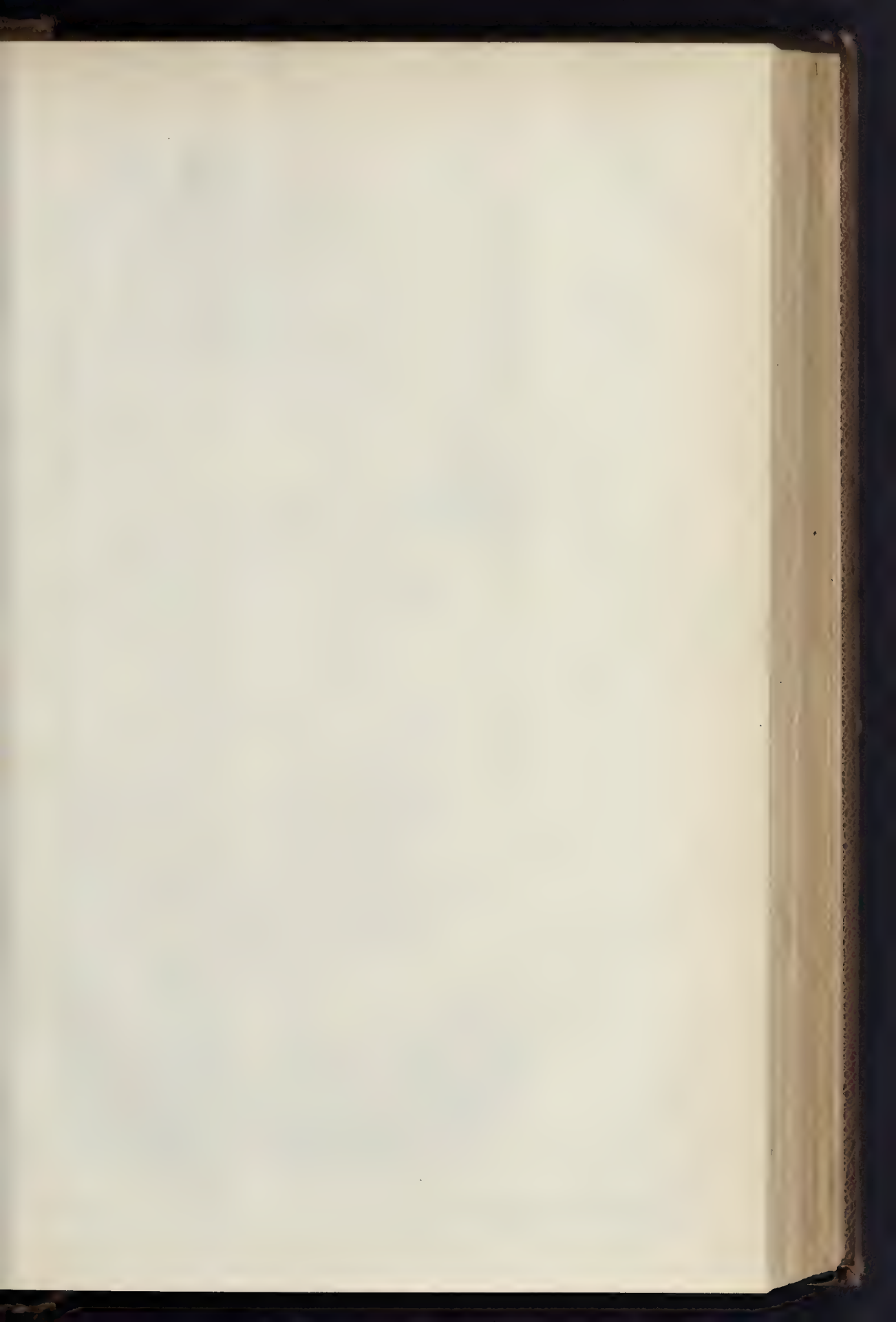




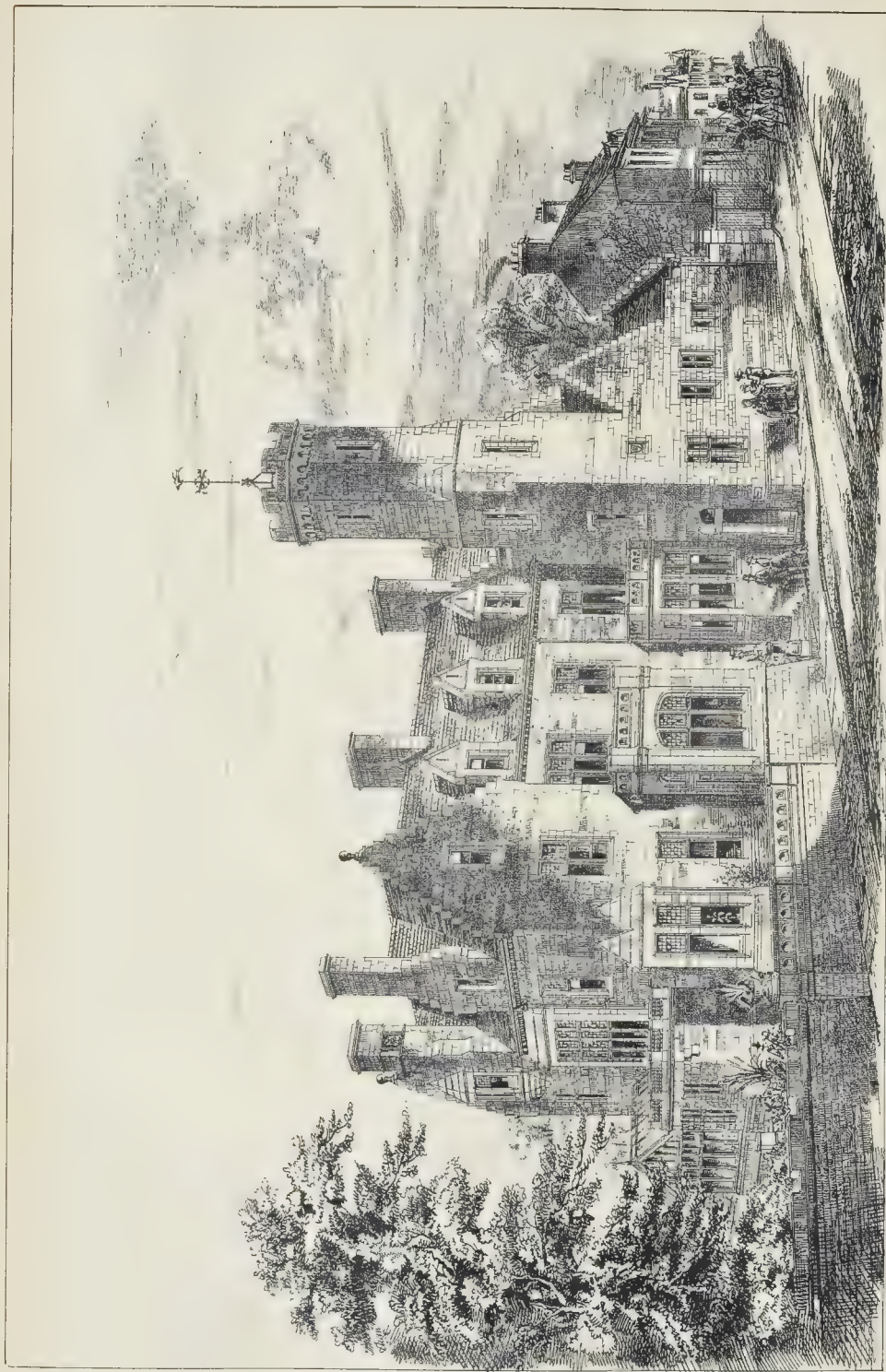






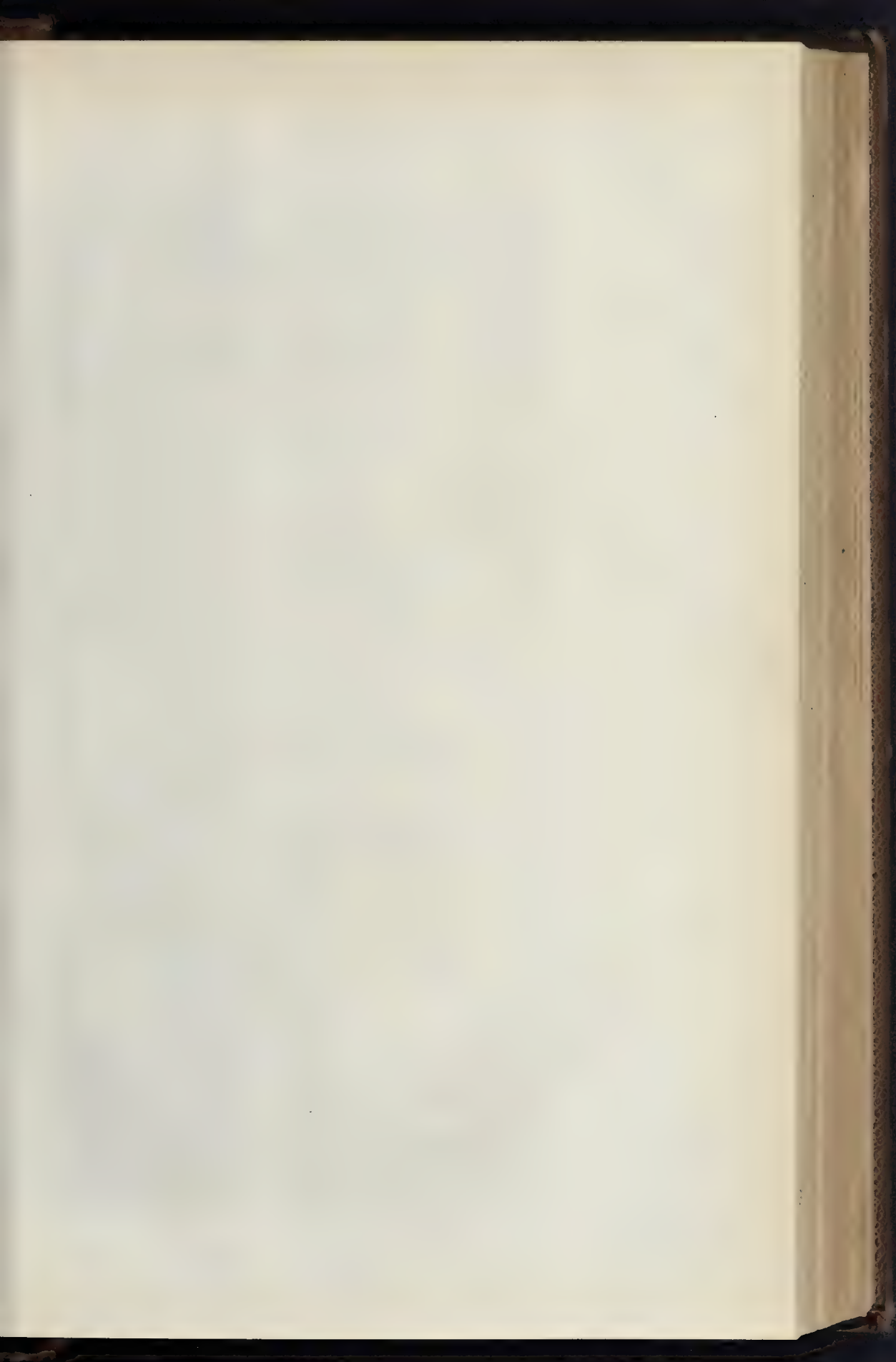


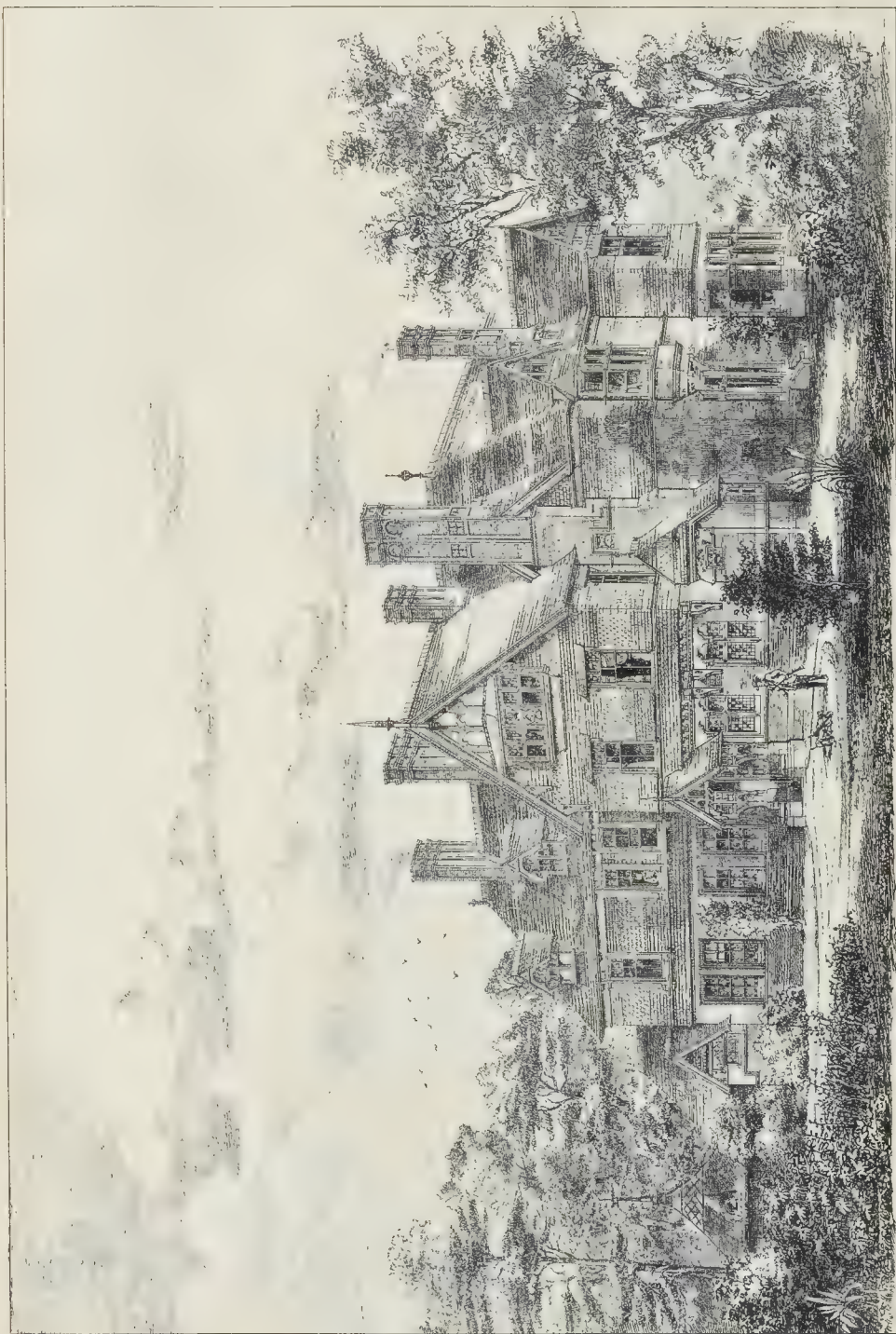
THE BUILDER JAN. 22 1861.



PURBECK HOUSE, SWANAGE.—MR. G. R. CRICKMAY, ARCHITECT.

W. G. R. CRICKMAY, ARCHT.





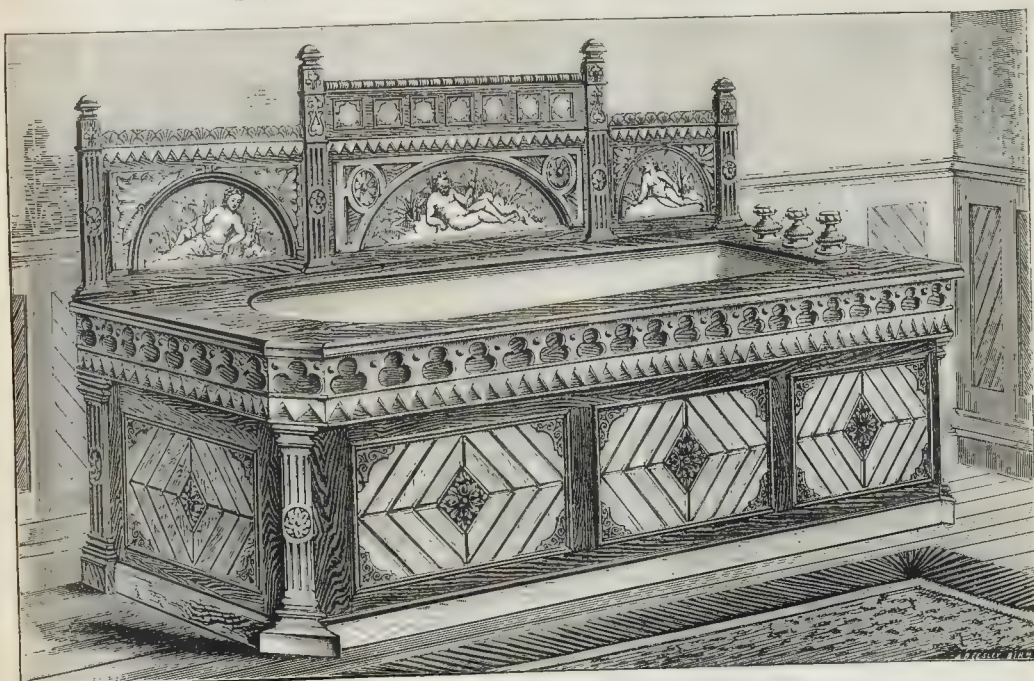
Wm. & A. Bell, O'Connell St.

"EVERTON" NEAR LYMNINGTON, HANTS.—MR. G. R. CRICKMAY, ARCHTCT.

A. S. B. & Co. Photographs, 9, Pall Mall, London.

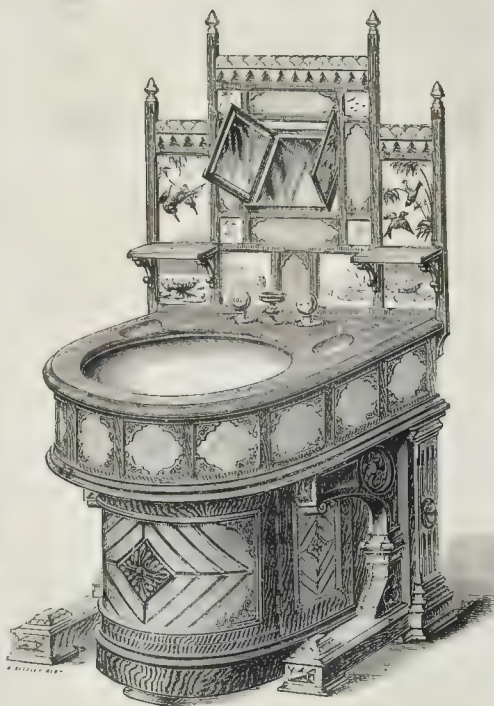


## ENGLISH ART WOOD-WORK AT THE MELBOURNE EXHIBITION.

ENGLISH ART WOODWORK  
AT THE  
MELBOURNE EXHIBITION.

THE bath here illustrated, which has been designed and executed by Messrs. J. Fell & Co., of Wolverhampton, for the Melbourne International Exhibition, and for Messrs. T. & C. Clark & Co., of Wolverhampton, is remarkable in several respects. The design is worked out in finely-grained pollard oak, inlaid with light oak. This is carved by hand, and is a good specimen of workmanship: the back is inlaid with three large tiles, representing Neptune with attendant nymphs; the background behind each figure is in gold, the figures are painted in azure blue on white; they are the work of a well-known artist. The bath is of cast iron, and lined with T. & C. Clark & Co.'s patent enamelled porcelain. It is fitted with improved standing waste and overflow, with hot and cold supply, nickel-plated, and the back contains no inside fittings, and is perfectly clear and free from overhanging valves or waste roses and gratings. Access to the valves is obtained through a door at end, fitted with a patent catch.

We also illustrate a lavatory made by the same firm and for the same destination. The woodwork is of pollard oak, inlaid with light oak, the back being inlaid with a river scone, well painted; in the centre is a patent mirror, unfolding like the leaves of a book. The basin is a "tip-up," fitted with patent nickel-plated self-closing valves; the top is a massive slab of St. Ann's marble, highly polished.



## THE BIRMINGHAM CORPORATION AND EMPLOYMENT OF ARCHITECTS.

THE Town Council of Birmingham some time since referred to the General Purposes Committee for consideration the subject of the employment of architects in connexion with works carried out on behalf of the Corporation. The committee on Tuesday in last week brought up their report. They stated that the present practice was for committees who were instructed by the Council to erect buildings to employ such architects as they thought fit. The committee now recommended that this discretionary power should still be exercised by the various committees, except with regard to works the estimated cost of which exceeded 10,000*l.*, and that in the preparation of plans for which professional assistance was desirable, the several committees should obtain such assistance, either by advertisement or by inviting a number of architects to submit plans, one or more of such plans being selected by the committee for submission to the Council, with recommendations thereon.

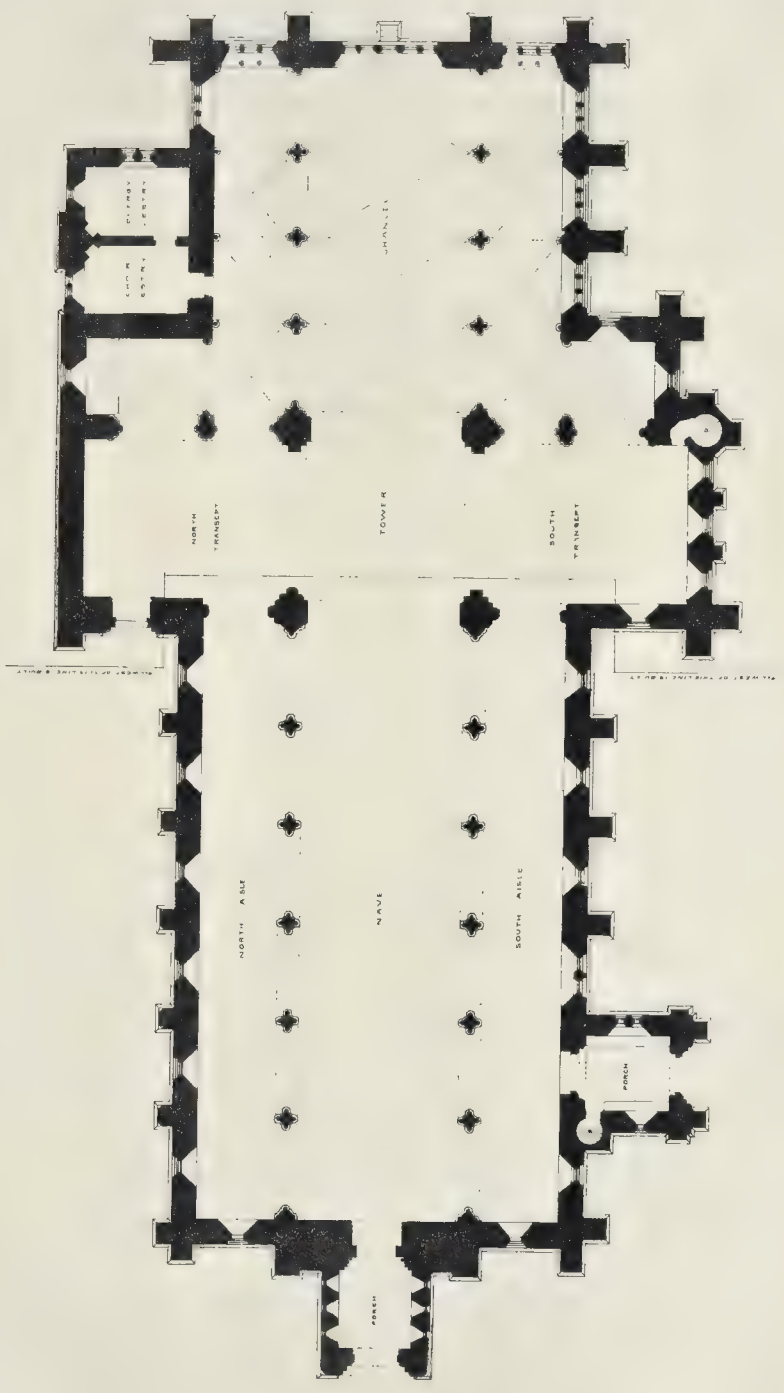
The Mayor (Mr. R. Chamberlain), in moving the adoption of the committee's recommendation, said that they considered it would not be to the interest of the town to invite competition where the works would cost less than 10,000*l.* In the case of a building costing 5,000*l.* or 6,000*l.* the net profit to the architect would only be about 150*l.* The leading architects would not care to prepare plans



ST. JOHN'S CATHEDRAL, NEWFOUNDLAND.—THE LATE SIR G. G. SCOTT, AND MR. GILBERT SCOTT, ARCHITECTS.



SAINT JOHN'S CATHEDRAL: NEWFOUNDLAND:

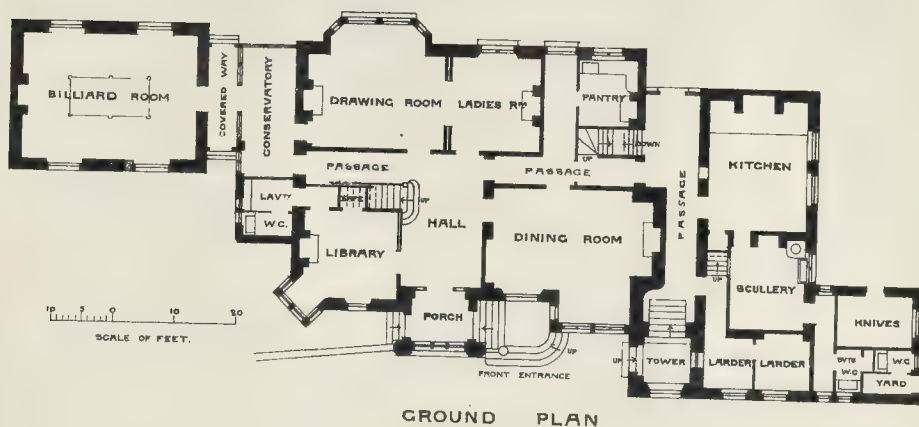


G. G. Lister, Esq.  
3 Strand, London

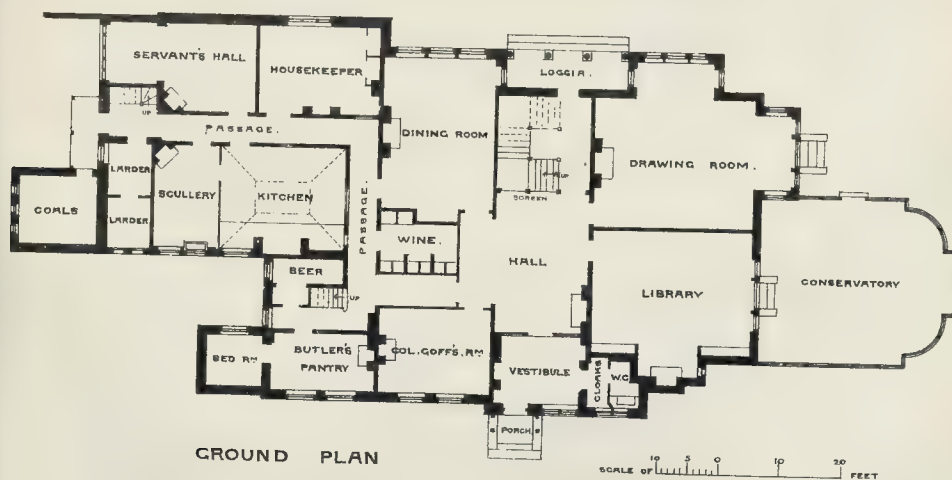
Scale 1/4" = 10' 0"

Wm. & A. S. Duggan, Esq., N. York.





PURBECK HOUSE, SWANAGE.



"EVERTON," NEAR LYMINGTON, HANTS





pamy during the time I was erecting the light-house, I could not disguise the fact from them that the legacy left the English Company was poor in comparison with the virgin wealth the Americans found. I came to the conclusion that the only profitable way of working was to extend the use of machinery, and continue the former excavations under water.

Having completed the erection of the light-house I returned home, and at my suggestion the company purchased and sent out a large quantity of plank. While at home I inquired into the question of explosives; for, from experience, I deemed gunpowder unsuitable in this case. At this period a strong controversy existed between the advocates of gun-cotton and dynamite. Gun-cotton at that time could not be exploded unless confined, which did not quite meet my requirements, as I intended to adopt the system of submerged surface blasting, i.e., simply placing the charge on the surface of the submerged rock without boring a hole. The object of this was to save labour and expedite the work. After consultation with Messrs. Prentice, the manufacturers of gun-cotton, a cast-iron shell was devised for holding the charges, and causing them when fired to exert their full power. This answered very well, but I found that it would be almost impossible to get freight for loaded shells, and I would not undertake the risk of charging them on the island; however, a considerable quantity of gun-cotton was sent out, a few uncharged shells, and some dynamite.

The preference given by me at that time to gun-cotton in comparison with dynamite, had no reference to their relative efficiency as explosives, but arose from the process pursued in their manufacture. The gun-cotton, being pulped after the nitric acid is applied, is of necessity thoroughly cleansed from any acid that might remain free, and is therefore, from that cause, not liable to spontaneous combustion; whereas in the manufacture of dynamite there existed no such guarantee, the elimination of free acid depending on the fidelity of the workmen in the factory.

The object in working, as about to be described, was not so much to get phosphate at the minimum cost per ton, as to get the maximum quantity in a limited time, without thereby unduly increasing the cost per ton. The result eventually arrived at was that the output was doubled and the cost per ton considerably reduced.

It will be remembered that when the Americans left off working, there were 2 ft. of water in the quarries. The process pursued for getting the phosphate that lay deeper was to drill holes and blast with powder and gun-cotton enclosed in tin tubes till a depth of 5 ft. or 6 ft. was reached, the loosened rock being removed by naked divers. To carry the excavations deeper still, cans containing a charge of 5 lb. of gunpowder were placed in the bottom and exploded with fuse or the galvanic battery. It was found by experience that 5 lb. of powder in this depth of water was the heaviest charge that could economically be used, and the rule adopted was to increase the weight of the charge in proportion to the square of the depth. This method of blasting was continued till a depth of 10 ft. was reached, and the loosened material was removed with naked divers as before.

Blasting at a greater depth than 10 ft. was performed still by explosives placed on the surface of the rock; but gun-cotton was, as a rule, substituted for gunpowder, the heaviest charges used being 7 lb. of the former, and 20 lb. of the latter, and the greatest depth of the excavation was from 25 ft. to 30 ft. Several methods of raising the loosened material were adopted,—(1) by means of ordinary helmet divers, the apparatus being supplied by Messrs. Siebe & Gorman; (2) by means of a wrought-iron diving-bell, about 9 ft. long, 2 ft. 6 in. wide at the bottom, 15 in. at the top, and 3 ft. deep, weighted round its lower edge with slabs of cast iron. This bell was found very cumbersome, and required strong tackle to lift it out of the water. Besides it was, till the defect was remedied, to some extent dangerous, by means of the violent oscillations that occurred when the compressed air escaped, as it always did at the ends. The remedy devised for this, and adopted in all bells afterwards, was to make a small hole a little above the under-edge, so that the air, after driving out the water to that level, escaped quietly in a constant stream. However, with this long-shaped bell, anything causing one end to be much higher than the other led to the

old oscillations, and eventually, at the urgent request of the men, it was abandoned. (3) By means of wooden diving-bells, made of 2-in. plank, and weighted with old chain wound round them, supported on bent iron bars. These were found very handy, as the chain could be unwound off its supports, when it was required to take the bell out of water, which was not often, as the naked workmen dived down underneath the edge and came up inside. (4.) Another form of wooden bell was used in a small quarry where there was only one weak derrick for hoisting the excavated material. This bell was supported on legs like those of a table, and the hole for allowing the air to escape was made higher up than in those bells described above, to prevent any chance of the bell lifting. When it was required to move this bell, all that was necessary was to plug the hole till sufficient weight was taken off the legs by increasing the air space, to enable the small derrick to move it while under water. An accident happened to this useful apparatus in its early days. The workmen, not being aware of the effect a submerged blast in its neighbourhood would have, fired one while the bell was under water. The result was a wreck, which was speedily repaired, the apparatus being very useful. (5) Amongst the general stores sent out at my suggestion from England were a considerable number of hoisting buckets, 2 ft. 6 in. in diameter, and 2 ft. deep; some of these, small as they were, I converted into bells, by turning them upside down, and bringing the handle over the bottom to sling them by. Then, as in the case of the wooden bells, old chain was wound round, and the air-hole drilled. The theory I acted on in this case was that a naked diver, obtaining air from these bells when submerged, would be able to continue at work longer under water than if he dived from the surface with his lungs filled with air at the ordinary pressure. The result proved that I was correct, and, further, time was saved, as the men could have the bell where they wanted, whereas without the bell they would have had to go to the surface to breathe. In some cases these bells were suspended from a wire rope strung high over the water, in others from short derricks on a punt. Excavation could be carried down with such men as I employed, to a depth of 30 ft. in this way.

The naked divers, whether working from the tub bells or from the surface, carried with them a sheet-iron vessel like an old-fashioned coal-scuttle. Lying on the bottom with this against their chest, they filled it by scraping into it, with pieces of sheet-iron they held in their hands, the broken stone. In shallow water they walked out with the scuttle full, in deep water they emptied it into a hoisting box or tub. The extent of the work may be judged, when it is stated that forty helmet divers were daily at work, forty men in diving-bells, and sixty naked divers working without any kind of apparatus. This has reference only to the submarine department; on dry quarry work there were many others engaged, the whole gang numbering 400 on an average. To economise labour to the utmost, the air for nearly all this apparatus was compressed by a double-barrelled air-pump, the barrels being about 5 in. diameter, and the stroke about 2 ft., driven at 60 strokes per minute by a steam-engine, and stored in an old steam boiler, from which it was conveyed through gas-pipes to various parts of the works. Storing the compressed air thus allowed of the engine being stopped for a few minutes without calling the divers up. The engine was worked to its full power, being set to do a number of things, not only to save labour, but, by condensing the steam, to give a supply of fresh water, saving, I have been told, 5,000l. per annum, the previous expenditure on water.

The experience gained by practice at Sombrore in the use of gun-cotton led to extended knowledge of its properties. It was stated above that when I left England gun-cotton could be only exploded if confined in a shell or bore-hole. Shortly after, Professor Abel, of Woolwich, found that if it was ignited with a strong charge of fulminate of mercury it would detonate without being confined. I had a large supply of such exploders sent out, and with this help got on very well with the cotton charges for submarine work, having made special arrangements with Messrs. Prentice to supply charges for this purpose of from 3 in. to 7 in. diameter. These were made up of round, flat cakes, having a central hole to convey the fire throughout the mass; they weighed up to 7 lb., and were each enclosed in a neat brown-paper wrapper. It

was usual at first to enclose these in tins before putting them under water; but one time running short of sheet tin, it occurred to me that all that was necessary, now we had fulminate exploders, was to keep the water from the charge. This the tin did imperfectly, as the pressure of the water often broke the cans. I resolved to try the experiment of coating the charges outside the brown-paper wrapper, with a waterproofing composed of boiling pitch, lime, and sand. With the view of creating confidence in the charge-makers, that no danger was to be apprehended from putting the cotton into the pitch-pot while there was a strong fire under it, I made the experiment myself, they looking on in terror. It succeeded as I felt confident it would. After much dispute, a regular method of doing the work was arranged, and, to my knowledge, no accident has ever occurred during the operation of waterproofing. Charges thus prepared were thoroughly efficient, and tin-smiths and tin-plates became unnecessary.

While writing about Sombrore, it may be interesting to describe a simple way in vogue there of burning lime. A hollow, about 18 in. deep and 10 ft. or 12 ft. diameter, is made in the rock; across this, on the bottom, are laid two trunks of trees, about 10 in. diameter, and 2 ft. apart. The space between these is filled in with brushwood, laid crossways; over these are branches to a depth of about 1 ft., then a layer of 6 in. of rock; on this is sprinkled a little small coal, over this about 2 ft. in depth of stone, then a little more coal, and so on, till a height of 8 ft. or 10 ft. is attained; the whole is then covered up with stones, lighted, and tended, to prevent the heat escaping faster from one part than another. When the stack gets cool the limestone inside is found to be thoroughly burnt, and the outside stones are dried ready to form the centre of the next stack.

#### A STRANGE ARCHÆOLOGICAL JOURNEY.

ACCIDENT the other day elicited from the proprietor of a shoe-black box plying his trade in Albany-street, Regent's Park, that he had a great fondness for archaeology, and that on one occasion, to gratify this feeling, he had made his way to Stonehenge and Kent's Cavern without a shilling in his pocket. Finding we were interested, he offered to try and write an account of his journey. This he has now sent us, and we print it without any alteration whatever. We may add that we are satisfied as to the truthfulness of the story.

It was on the 15th of August, 1877, that I went upon the journey of which I propose to tell you; but, as my manner of going was rather questionable, I think it but right to say a few words in explanation, before I start. The fact is I was in that peculiar position in which it is impossible for a man to *lose* anything. I was out of work; out of clothes, out at the heels, out at the toes, out of money, and in debt. And, moreover, I was out of a lodging; and, furthermore, I was fifty-seven years old; and in addition to all this, I could see no prospect of getting anything to do,—for where there are twenty young men knocking at the shop-door, what in the world is the good of an old fellow calling? So, finding myself thus situated, it struck me that now was the time to satisfy the desire of my heart, as far as in me lies; and since I could now have no hope of seeing Rome, Egypt, &c., to be content with Stonehenge and Kent's Cavern, and go for them at once. And this I did without more ado.

It was ten o'clock on the morning of the 15th when I started, and the weather was beautiful. I had ninepence in my pocket, all told; but I also had a toy month-harmonium, from which I expected great things, and upon which I could play two tunes,—“Rock of Ages” and “Twinkle, twinkle, little star.” I went through Shepherd's-bush to Acton, where I spent twopence in bread and cheese, and then through Hanwell, Heston, across the Bath-road, and into the Staines-road. Egham races were on, so it was pretty lively down there, and I almost forgot my own loneliness while I was passing through the gay multitude; but when I had left them far behind me, and the merry sounds died away in the lengthening distance, such a strong feeling of melancholy came over me that I stopped and was a good mind to turn back. I sat down by the roadside and had a good smoke, that I might the better consider the subject; and eventually, pursued my journey with re-





Mr. Roland Roberts. National book-prizes were awarded to James Thomas for a design for muslin; and to William Kitson for a portrait-model from life. 42. worth of books instead of silver medal were awarded to W. G. Thomas for a design for iron gates, and the same number of books (also in lieu of silver medal) to W. Catchpole for design for a candelabrum. A silver medal was awarded to Frank Brown for a design for a house; and a gold medal for modelled design for a picture-frame on ceiling (which also gained the Plasterers' Company's prize of 7*l.*) to William Kitson. Several other local prizes were given in connexion with the Museum and the school.

On the motion of Mr. Lomax a vote of thanks was accorded to Mr. Seddon for presiding and for past services to the Museum; and Mr. Randall Dence (curator and assistant secretary) and Mr. Brown (the art-master) having addressed a few words to the students, the meeting terminated.

#### LIVERPOOL ARCHITECTURAL SOCIETY.

The fourth meeting of this Society was held at the Royal Institution, Colquitt-street, Liverpool, on Wednesday evening, January 12th, the President, Mr. Charles Aldridge, F.R.I.B.A., in the chair. After the usual routine business, the secretary announced that the sub-committee appointed to go into the merits of the measured drawings of the north vestibule of St. George's Hall, submitted by the students as recess work, had reported to the council that, in their opinion, those by R. Holt were the best, and those by C. R. Chidson were second; they also highly commended the drawings sent in by J. H. Havelock Sutton. The council had approved of the award of the sub-committee, and the prizes would be given accordingly. The death of Mr. George Goodall, one of the oldest members, was announced, and a vote of condolence with his widow was passed. Mr. Samuel Huggins, also a very old member, who had sent in his resignation owing to ill health, was elected an honorary member. A paper upon "Domestic Sanitary Economy" was read by Mr. J. W. Gibbs (Messrs. John Gibbs & Sons, sanitary engineers, of Liverpool), illustrated by carefully-prepared diagrams shown by the oxy-hydrogen light, descriptive of a system of ventilation as applied to a large dwelling-house, through the medium of Messrs. R. Boyle & Son's self-acting air-pump ventilator. Mr. Gibbs urged the importance of having a proper system of ventilation applied to the lavatories, &c., of dwelling-houses, and that a constant upward current should always be maintained in the shafts connecting the soil pipes and drains with the roof, and that this desirable object might be best attained through the above medium; otherwise the emanations from the coatings of the drain-pipes would, in the event of the water-basin of a trap becoming dry, or of a leak occurring in the drains, find its way into the apartments of the house, and introduce the germs of disease. A meeting of the Students' Class of Design and Construction was held previously to the ordinary meeting, when a large number of designs for "A Small Stable" were handed in. Mr. Arthur P. Fry was the visitor for the evening.

#### PONTEFRAC TOWN-HALL SCHEME.

The Corporation of this borough held another specially-summoned meeting on Tuesday evening to consider a requisition signed by ten members, to take immediate steps in the rebuilding of the town-hall, &c. The majority at the last division, when the scheme was thrown over, now proposed that the old town-hall should be cleared away, and important street improvements carried out. This was met by an amendment that the Corporation should be empowered to spend a sum not exceeding 7,000*l.* out of the rates in the erection of an assembly-room, with surveyor's offices and extra police-cell accommodation, to include the purchase of additional properties, the old vicarage and dispensary, and the architect's commission. The amendment was carried by eleven to ten votes, so that virtually the original scheme will now be carried out. The 3,000*l.* subscribed by the public will be devoted to the purchase of the property, and the 7,000*l.* to the building. Only a portion of the dispensary, for which the Corporation have paid nearly 1,500*l.*, will now be required, and the rest will consequently be for re-sale. The assembly-room,

it is suggested, shall be slightly curtailed in size; and it is proposed to adopt the plans of "Straight and True," with some modifications. The main front will be brick instead of stone.

#### VIENNA TOWN-HALL.

THE Municipal Council of the Austrian capital has determined to decorate the interior of the Hôtel de Ville in an artistic manner. Amongst the principal features of the proposed embellishments will be three large paintings on the ceiling of the Grand Hall. The celebrated artist, Hans Makart, has already been appointed to execute these paintings. A colossal picture in the centre will represent the City of Vienna, with all her modern improvements. On the right will be a painting representing the Sciences and Arts, whilst on the left Commerce and Manufactures will be depicted. Around the Grand Hall will be placed statues of the principal local celebrities, and of men who have rendered eminent services to the Municipality. On the walls will be mosaics and medallions representing men of Vienna birth who have distinguished themselves in intellectual pursuits. The principal sculptors engaged for these works are Herren Weyer, V. Tilgner, Schmidtgruber, and Wagner. In the Hall of Presentation there is to be a grand battle-piece, painted by L'Allemand, representing the Siege of Vienna by the Turks. All the artists engaged in these works of decoration in the Vienna Hôtel de Ville are Austrians.

#### OBITUARY.

Mr. W. K. Broder.—It is our melancholy duty to record the death of a promising and talented young architect, Mr. William Kedo Broder, who fell a victim to that unfortunate practice, so common amongst men of business, of getting into a train while it is in motion. Mr. Broder fell between the platform and the carriage, and received injuries from which he died in a few hours. The deceased, who was a member of a Roman Catholic family, was chiefly engaged in buildings connected with that community. His two most important executed works are,—the Priests' House and Schools at Sanbury, a picturesque group of half-timber buildings, and St. Joseph's Roman Catholic Church, Brighton, a bold single-span churob, vaulted in stone.\* Mr. Broder had devoted a considerable amount of time to travelling about Europe; and one who was a frequent companion in his rambles has written to us of him as follows:—"A more sincere friend, a more genial and good-natured man, or a more devoted and enthusiastic artist, I have never been my good fortune to come across." Mr. Broder died on Saturday, January 8th.

#### A NEW BUILDING ESTATE.

THE site upon which stand the Roman Catholic Schools, at Richmond-road, West Brompton, built within the last few years by Monsignor Capel, is about to be converted into a building estate, by a company who have purchased it for that purpose. The site occupied by the schools, together with the grounds, occupies an area of about 4 acres in extent, and will shortly be covered with a large number of houses of a superior character. In order to clear the ground the materials of the schools were sold last week, by Messrs. Horne, Eversfield, & Co. The schools are now in course of demolition, preparatory to laying out the estate for building upon.

#### UNSANITARY HOUSES WITHOUT OWNERS.

THERE are just now a number of dilapidated houses near the banks of the river at Wandsworth which are not fit for habitation, but which are nevertheless occupied by poor people; and there seems a difficulty about either repairing or clearing them, as no owners for them can be found, and the tenants appear to pay no rents. The subject was brought under the notice of the Wandsworth District Board of Works at their last meeting, when it was stated that the houses had been condemned by the medical officer and surveyor, as being both dan-

gerous and unsanitary, but that an obstacle stood in the way of their being repaired, as no owners could be found to claim them and become responsible for the work necessary to be done. In the course of a discussion which took place on the subject, the chairman observed that it was scarcely to be wondered at that no owners could be found for the houses, as, in his opinion, they were quite past repairing. It appeared to him very clear that the houses could be closed if they applied to a magistrate, and the clerk was directed to take the necessary legal steps, and apply to a magistrate accordingly, in order that the houses might be cleared of their occupants, and closed as soon as possible.

#### TO PERSONS ABOUT TO BUILD.

SIR,—When a person is about to build, he or she employs an architect to make plans, elevations, and sections. This done, and approved by the employer, the architect then has to draw up a long specification, describing in detail all the work to be done and the different kinds of materials to be used. This part of the work complete, the employer asks what the cost will be. The architect replies, "I have not taken out quantities, but my approximate estimate is, say, 2,000*l.* You had better get a builder's estimate." Allow me to say that architects, as a rule, are gentlemen, and will not do anything shabby, and will tell you right off what can or cannot be done. The employer asks a builder for his estimate. The builder has to spend a great deal of time in viewing the site, ascertaining water-supply, haulage of materials, drainage, and, in fact, everything for the completion of the work. He has to read the plans, thoroughly study the specification, measure every part of the ground-work, and the mason's, bricklayer's, carpenter's, joiner's, plumber's, painter's, glazier's, and decorator's work. He has then to price these, which, perhaps, may contain 5,000 items. This takes a long time. Moreover, a man must be practically experienced to arrive at anything like an accurate estimate.

There are many who would jumble it over, sign the contract, and the first week begin scamping the work. The employer then finds, to his sorrow, that he is in bad hands, and the result is perhaps a very costly case of litigation.

Question.—I ask whether any person in any trade would spend twenty-one days in making calculations, exercising his talent and practical experience, taxing his brain, and then have his work hawked about among others of his trade? The employer says, "I have not told a single person what your estimate is, and my servants never speak about my business."

Suggestion.—When a person is about to build, let him employ the architect whom he knows to be a good man, and who has a list of good, substantial, and trustworthy builders on his books. Let him then decide upon the plans, and place himself entirely in the hands of the architect, who will at all times do justice to employer and employed. When the work is done, measure and value and pay according to quantity and quality. By these means he will have a good substantial building, and he will be ever friendly with his architect and builder. Moreover, if this system were adopted, it would save over fifty per cent. of builders from being in the Bankruptcy Court, and would, I know, save ninety-nine per cent. of the expensive cases of litigation.

BENJAMIN INKPEN.

#### THE PARKES MUSEUM OF HYGIENE.

SIR,—I should like to call attention to the fact that though we have in our midst so valuable an institution as the Parkes Museum, the avowed purpose of which is to disseminate sound ideas of sanitation, the bulk of the people are debarred from visiting it through its being open but a few hours in the day (from ten a.m. till two p.m.), when most men are engaged either in their professional or industrial callings. It would be a boon to the working-classes of the metropolis,—especially to those of them who are engaged in the building trades,—and the public in general, if it could be opened on a similar basis to the South Kensington Museum. Students of the Science and Art Department who are pursuing the study of building construction would be able to obtain valuable information, which at present they find it difficult to obtain from other sources.

J. F. WALKER, Bricklayer.

\* Interior and exterior views of this church will be found in *The Builder*, vol. xxxix., pp. 314, 315.









piers formed of stones pitched upon edge replacing the large flat blocks that were swept away by the action of the waves. In many situations it would be found practicable to use clay-work to, at least, half tide, as a combination of earthwork and stonework would lessen the expense of piers considerably. Half-tide embankments have been successfully used in Holland, for, except in very exposed situations, it is not necessary to breast more than the lower slope; that is, in cases where there are two or more slopes with a coss between them. The Dutch adopt, as a general rule, for half-tide embankments, an inner slope and top of bank covered with layers of clay 8 in. in thickness, and planted with grass; and the outer top slope and coss, with layers 12 in. thick, and sown with a mixture of salt marsh, meadow grass, and clover seed; this being protected with a "crammat" until the grass has grown, which generally takes about three years. The lower slope has a layer of clay, 18 in. thick, protected either by fascines or stone work, but the former are preferred for several reasons. They are found to be less expensive, and because a foreshore forms outside the bank which covers up the stones, which are rendered useless. The Dutch engineers recommend fascines, too, for the protection of the bank in preference to stone, for these other additional reasons,—that the numerous stakes fastening down the fascines act similarly to the rough projections of the slates, and break the force of the waves. The protections of straw, called "crammats," which they use, act similarly to gravel and shingle, and their roughness, combined with their absorption, break the force of the waves. Mr. Henry Kinahan, M.R.I.A., in a paper read a few years ago, "On Piers and other Sea Walls," before the Civil Engineers of Ireland, said that he had seen masses of *alva marina* used similarly to protect a place in the bank the sea was breaching. Mr. Kinahan's paper, as a whole, will be found useful as a reference, both in regard to expensive forms of embanking, as well as more simple and far less expensive methods, and it otherwise affords some interesting facts concerning the peculiarities and practices indigenous to Ireland in the past, and to some extent still existing. The Dutch make their banks usually of sand or other materials ready to hand, necessitating the thick layer of clay. An old system that obtained in Ireland, nearly abandoned now, was to build a bank faced with faggots, and these seemed effective and cheap, as they prevented the slipping of the banks and the wave-wash while the work was being constructed. Faggots were used in some of the Irish banks for stopping the breaches where expensive piling failed. It is known that some of the Continental engineers use a combination of basket and fascines, i.e., faggots, to close the last opening in an embankment.

The rapid denudation that is taking place in several parts of our coasts might be stayed and much valuable land saved by the construction of groyne of an inexpensive kind. Various materials might be used to make groynes; wood, however, is commonly used, though in some localities stones, slaty or flaggy stones, would be cheaper and more effective if pitched on the edge and backed with sea-weed, gravel, and shingle. An effective groyne has been made more than once in the sister island, of sea-weed and straw "saggans" to keep the sea out of the turf banks. The sea-weed was tied into bundles, and the saggans run through the tyings as each was placed in position; the bundles, as placed, were weighted with sand, while the seaward end of the saggans was weighted with stones. When the wall was of sufficient height it was then backed with sand, and the groyne was complete. A groyne of sea-weed of course suggests other vegetable growths and materials, such as faggots of whin, or furze, brushwood, old barrels, creosoted guano and other bags, with casks often wasted and unutilised. These, filled with sand, could be fastened in position by either chains or wires run after row, until a beach had accumulated to the height required. A backing could easily be procured, such as sea-weed, sand, gravel, drift, and other materials, this backing adding to the stability of the groyne previously to the beach beginning to accumulate. No certain rules can be laid down for the length, position, or number of groynes; for, as localities widely differ, set rules will not be found to answer. A few trials of experimental groynes will afford a useful test and will be the best way of finding out what is required in a doubtful situation.

There are several useful aquatic or water-plants growing on the margins of our rivers and lakes, and trees also, which have remarkable binding qualities through the nature of their roots, and they possess other useful properties besides. Among these are species of water-lilies, reeds, "faggots," i.e., flags, rushes, &c., and those trees of the willow order, including osiers and willows. Though living and growing in damp situations, and often with their roots in the water, they take a deep and a firm hold, binding the earth with their roots though surrounded by water, or partly within and without that element. There is many a swamp that yields no return from one year's end to another, which might be profitably utilised by growing osiers and other plants with a marketable value.

The reclamation of land is a most important question, for it means some additional millions of acres put under cultivation, and greatly increased food supplies for man and beast, a vital question indeed that ought to be more seriously considered by the statesmen of our time. Where nature, then, can be enlisted to assist us in the work of land reclamation, her aid should be availed of to the fullest extent, and no opportunity lost in doing much good work with the materials to our hands. A large outlay of capital for the execution of ambitious schemes of engineering work can only be expected in a few places; but the work we have indicated can be performed successfully, little by little, and with advantage to the doers and the nation.

#### UNPREPARED.—AS USUAL.

PEOPLE who live in countries that are liable to shocks of earthquake usually endeavour to build their houses with some reference to such a visitation, avoiding tall buildings or massive and rigid materials, for instance, and preferring low habitations, principally of timber. If they deliberately built lofty houses of heavy masses of stone, which were certain to topple over and crush them at the periodical earthquake season, they would be regarded as very suicidal people, even if the chance of getting through an occasional season without an earthquake were taken into account.

Frost and snow are not such serious matters as earthquakes, certainly; but, considering the amount of inconvenience and distress they entail when coming suddenly and in force upon town and country, the solidity with which we go on from year to year without making any definite or systematic effort to be prepared against these inconveniences is very remarkable. We know that we may, any winter, be subject to a severe frost of more or less duration; that when it is hardest it is also generally very sudden, and that it is difficult to predict, with any probability, how long it may last. Yet we actually behave as if such visitations as severe frost and snow were quite unexpected and unheard of in this climate.

As far as the country is concerned, of course, little or nothing can be done, in the case of a severe fall of drifting snow, except to endeavour as quickly as possible to get the railway communication clear. The railway companies, with their immense staffs, and their power, if properly employed, of organising labour and means, have exceptional advantages in dealing with the difficulty, and their interests so manifestly square with their duties in this particular that they may be generally trusted to use all their available means to effect a clearance as soon as possible. But while we have probably no reason to charge them with neglect in this respect, the conduct of some of the companies recently, in almost deliberately (for all we can see to the contrary) selling tickets and sending out whole train-loads of passengers on journeys when they must have had full intimation that the lines were blocked, and that they were only sending out passengers to the certain discomfort and misery of being detained for many hours on the road in this exceptionally severe weather, cannot be too strongly commented upon. The system adopted, apparently as a policy, or at all events as the result of the most culpable carelessness and indifference, of keeping passengers for an outgoing train quite in the dark as to the state of the line, and taking their money for a journey on which the company's officials know that they cannot be conveyed, is simply swindling, and not only that, for it is cruelly as well. Delicate women, and men who are not in rude health, may have to date premature death or irremediable injury to the constitution

from the hardship and exposure to which some have evidently been, we must say, wantonly exposed. We hope that some of the victims who can best afford it will take up the case of the public against this selfish railway officialism, by bringing the matter to a legal test and reading some of the companies a practical lesson on that point.

But if we come from the country to the town, and take the principal town of the kingdom as an instance, we see a lamentable spectacle, in such weather as we have been experiencing, of apparently almost utter inability to foresee a difficulty and provide for it, and want of spirit and organisation to meet the circumstances when they do arise. The clearing of country roads, when blocked to any great extent, may be regarded as nearly an impossibility; the labour and means are not generally to be had, and the only thing is patience. But for a great town like London, a fall of labourers wanting work, and in which all the necessary appliances ought to be available, to be blocked and rendered nearly impassable for vehicles for a whole week (up to the time of writing this), is really discreditable and quite unnecessary. The duty imposed by the law on householders of clearing the footway before their own property, seems in most parts of the town to have been fairly attended to. But we surely have equally a right to expect that the public bodies who represent the ratepayers in each division of the town should be bound to clear the streets, each in its own district. In the City considerable effort has been made in this way; and we learn that over 1,000 extra hands were employed for some days in clearing the roads and removing the snow; and as far as we have been able to observe, this effort was extended further eastward than the City. But in West London the state of things has been most discreditable. We have seen for a whole week the great thoroughfares and squares lined with heaps of snow, piled up and left to form a barrier between the footway and the carriageway, and the carriageway itself left covered to a formidable depth with snow, which, even under the present temperature, is slowly degenerating into mud, and which as soon as a thaw comes will transform the streets into ditches. And the most discreditable part of the matter is that the labour necessary for the removal is to be had in abundance, if any one, or any public bodies, had sufficient administrative ability and foresight to organise it. At the beginning of this week we had occasion to hear a good deal personally from some of those who represented the three large societies which, through the columns of the *Times*, undertook among themselves for the relief of distress in the poorer districts of London, viz., the Charity Organisation Society, the Society for the Relief of Distress, and the Metropolitan Visiting and Relief Association. We learned from these gentlemen, clergymen and others engaged in practically carrying out the objects of the combined societies, that the distress was very great in East London from the stoppage of work, and that there was great difficulty in knowing how to meet the case, not so much from want of money, of which a good deal was forthcoming, as from the difficulty of applying it so as to render effectual service without rewarding more idlers or demoralising and pauperising the population by indiscriminate charity, a result which it is well known has constantly followed the establishment of great special relief funds inconsiderately administered. Now the fact we wish to emphasise is that, during the past week and more, in East London there have been thousands of men of the poorer labouring class thrown out of work, wanting work, only too thankful if they could get it; there have been organised committees supplied with funds to at least a considerable extent, anxious to help those in distress, but in the greatest difficulty to see how to do it, and all this time there has been in West London useful work for hundreds, we may, indeed, say thousands, of people, work which the public would be thankful to see done, which public convenience actually calls for, and which has been all this while left undone. Money has been sent from the West to the East, which, if applied, must in some sense be applied rather as charity than as wages, a kind of application always carrying its evils with it; yet no one seems to have thought of bringing labour to the West, where it is wanted *pro tem.*, as much as money is wanted in the East. In our public district representatives think that that sort of affairs. Thousands of men at one end of a great city wanting work,—work for thousands

of men at the other end of the same city, and no one with head enough on his shoulders to put two and two together.

Among the less apparent and wholesale, but nevertheless among the very serious discomforts which might be avoided, is that of want of water from the freezing up of supply-pipes; a deprivation entailing not only the greatest discomfort, but also, in many cases, operating very injuriously to health. Yet all this might be prevented if we did not lay on our service-pipes, or allow others to lay them on, as if there were no such thing as frost. The water companies, we take it, must share a large portion of the discredit for this evil. They ought to see that up to the outside of the houses service-pipes are laid so as to be secure from frost, either by being sufficiently deep in the ground, or by being cased in a rough casing with straw lining, where circumstances render it necessary that a pipe should come to the outer air before it enters the house. Inside the house it is a matter for the tenants. Provided the pipe is right outside, a small gas-jet where it enters the house (which is usually at some otherwise cold and unused corner) would do the job. Those who have suffered and are suffering from this deprivation of one of the chief necessities of healthy life should make a note of it and endeavour so to arrange that they shall not be subject to it again. There is no real difficulty in the matter. The difficulty merely arises from the fact that most people never think about frost till it comes, and then they are almost indignant at their weak points being found out. Whenever we go we hear the same story of short allowance of water and its consequent discomforts. In the house in which we are writing we have not experienced the slightest impediment in the water-supply or in the usual working of water-closets, &c., during a week or more of severe frost, and no one else need experience such discomfort if he will take precautions against it\* beforehand instead of waiting till the frost comes to find it out.

The question what to do with all our unusual accession of snow, supposing it removed from the streets, is of course one of some difficulty; and here, again, we have to note the mistake of procrastinating experiments on this head until the evil is actually upon us. Means were suggested and partially tried some time ago for artificially melting snow so as to run it off economically into the sewers or the river, and if these had been tried and perfected during some light falls of snow in previous years we should now know what to do. But the experiment has now to be tried, and its success or otherwise ascertained, just when we want to deal with the matter quickly and with certainty. The moral is, look ahead and be prepared for emergencies before they arise. No place suffers so much as a great city, when the weather does get the better of its machinery, because the machine is so big and complicated that the slightest clog to its working produces very serious effects. But no place has such large resources against atmospheric surprises as a great city has or should have, if only they are rendered properly available.

**"Sanitary Science in its Relation to Civil Architecture."**—Mr. Ernest Turner, F.R.I.B.A., in a communication which from want of time was not read during the discussion on this subject at the Royal Institute of British Architects last week, wrote:—"In furtherance of the study of sanitary science, I shall have much pleasure in placing at the disposal of the Council of the Institute a silver medal to be competed for in 1882, and suggest that it be awarded to the candidate who obtains the greatest number of marks in sanitary subjects at the first compulsory examination. I leave this, however, entirely in the hands of the Council to determine."—Mr. J. Wallace Peggs, C.E., writes:—"In your excellent report of the discussion which took place at the Royal Institute of British Architects on Monday, 17th inst., on the paper 'Sanitary Science in its Relation to Civil Architecture,' I am reported to have said as follows:—'Professor James Thompson very early, about 1866, disconnected the soil-pipe of his own house and delivered it into a street gully. (?) This should have been 'delivered into an ordinary gully.'"

\* The placing of the cisterns in many London houses, practically, in the outer air, is of course a source of increased difficulty in regard to this evil. The cisterns should be under cover of a good roof, and with some means of slightly warming the air where they are placed, in cases of very sharp frost.

#### THE NEW COMMANDMENT: "THOU SHALT NOT WORK."

THE month of January, 1881, will long be memorable for the fury with which a late winter has descended upon England. The daily papers are full of the same kind of news from all parts of the country. Low temperature, terrific gales from the east, persistent and blinding snow, the fine granulation of which is no obstacle to its forming drifts of as much as 16 ft. in depth, constitute the staple of the reports. Hail-storms have beaten on the Yorkshire coast; but the greatest intensity of the cold has been experienced in the usually temperate districts of Devon, Cornwall, Somerset, and South Wales, a fact that denotes the southward movement of ice-floes in the Atlantic. Sensational writers in the Press are making things pleasant to their readers by speculations as to geological changes, and the possible return of the glacial period, in which lucubrations they evince unusual audacity in the use they make of half-comprehended scientific terms. In a word, a Russian winter has come upon us unprepared, and so much suffering has not been caused in England by the fury of the elements within the memory of the present generation.

The outbreak of this Arctic storm has coincided, in point of time, with a prohibition issued by the trade-unions to about one-tenth part of the colliers of the United Kingdom against going to work in the pits. We desire to speak on the subject with perfect candour and impartiality. How deep a personal interest every Londoner will find involved in the question, we cannot tell at the time of writing. The arrest laid by the mighty hand of Nature on the works of man is so far more prepotent than are the orders of a trade-union, that public attention is at this moment riveted on the physical, rather than on the moral, difficulties of the situation. But the last notice that reached us of the movement of the coal market before the setting in of the snow-storm was to the effect that small coal, used for manufacturing purposes, had advanced in price, in some districts, from 1s. 6d. to 10s. per ton,—that is, had become sevenfold its former price. How far this may be taken as a guide to other changes may possibly become apparent before we go to press.

In times when war was the normal state of national relations, the fury of winter was ordinarily so far respected as to ensure a temporary truce. Troops went into winter quarters. In some cases such a procedure is involuntary. Napoleon Bonaparte, a man who considered that his own will was to regulate the action of Europe, was reduced to inactivity by a German winter, before he provoked the fury of a Russian climate. In the earlier times of Louis XIV., the retirement of the troops of the Grand Monarch into winter quarters had something of the aspect of leaving Paris for the season, or of any of the local migrations presented by fashion. Whether necessary or not, however, the rule was ordinarily followed, and may be taken as one of the immemorial traditions of the art of war.

It is thus worthy of attentive remark that the instigators of what almost partakes of the character of a civil war,—those who set class against class,—the hands against the heads,—the workers against the providers of work,—have selected a time so severe for the commencement of a campaign intended to be decisive. It is our profound conviction, as our readers are aware, that the true interest of every industry is comprehensive and compact. We deny that there can be any conflict between the true interests of labour and of capital, rightly understood. At the same time, it is impossible to deny that this view is not universally held. More than that, questions may and do from time to time arise as to which different views may be entertained, and to decide which contests from time to time take place that will not be avoided merely by being deplored. We are not, therefore, at the moment, denying the abstract right of any body of workmen to discontinue work if they are dissatisfied with the terms on which it is offered them. And, such being the case, we cannot condemn the selection of such times as may seem best suited, by either party, to enforce their demand. War itself,—we speak of the war of man and master,—we hold to be a costly and miserable folly. But if this war be entered on, it has its own hard rules. It is not to be fought with rose water. Nor have the unions any hand,—so far as we can trace the connexion between human and elemental action,—in intensifying the rigours of this particular

winter. At the same time, the severity of the season will no doubt lead to a very severe scrutiny, both of the motives and of the intelligence of the advisers, or rather the compellers, of a strike at such a season, on the part of large masses of the public, who ordinarily pay but little heed to "trade disputes." That, perhaps, is not altogether an evil. Altogether an evil, though, is the unprecedented amount of suffering to which we fear that at this moment the wives and children of the Lancashire colliers, to say nothing of that respectable body of stalwart workmen themselves, are exposed by the orders of the union, reversing in many instances the decisions arrived at by the miners themselves.

Public attention, we have said, is tolerably sure to be riveted on the present contest in an unusual manner. It is very well that this should be the case. For although in some places the never-closed sore of local contest as to the rate of wages has been referred to as a cause of strikes, such is not the matter that is really at stake. The reason why 50,000 coal-miners are ordered to be idle in the severest winter they have ever known is quite apart from the rate of wages paid in one or another district. It is a movement that is distinctly political. It is the resolve of the union to prevent the men from making arrangements by which they should, as it is called, "contract themselves out of the operations of the Employers' Liability Act of last session." This is a subject on which such violence has been shown, and such measures have been taken, to prevent any free action on the part of the persons directly interested, that we hope we shall be doing public service by looking a little closely at the main facts of the case.

In the year 1879, 476,810 persons were employed in the collieries of Great Britain. This shows a falling off since 1875, when the number of men employed was returned at 525,843. For the sake of the inquiry into which we are about to enter, we will take the round number of 500,000 colliers. We may observe, in passing, that the productive value of the collier's labour, which for years was steadily on the decline, has risen in the year 1879; the rate being 284 tons of coal raised per workman. This is still ten per cent. below the industrial energy of the collier in 1871, but it is eight per cent. more than his duty value in 1874. The fatal injuries sustained in collieries in 1879 were 1,037. This was a diminution of 453 as compared with the preceding year. Taking round numbers, which every one can correct for himself, we put the deaths at 1,000, or 1 for every 500 persons employed. Out of this 1,000, according to the average of a large number of years, 330 deaths are occasioned by falls of coal or of roof; 200 are caused by explosions; 150 are due to shaft accidents; and 320 are attributable to miscellaneous causes.

The provisions of the Employers' Liability Act of last session so far throw on the masters the onus of casualties in the mines, that they abolish the former plea of "common employment." We are not now about to express any opinion upon the policy or the efficiency of the measure; we look only at the law as it stands. The result of that is, that if in any case of casualty it can be proved that the mischief was due to any negligence on the part of the master, or of his authorised agents, compensation shall be made to the sufferers or their representatives. Such compensation, however, is in no case to exceed the amount of three years' wages. Whether this maximum sum is to be calculated at three years of 313 full days each, or at the average number of days actually worked, and whether any deduction is to be made for the cost of the maintenance of the workman himself for those three years, are questions on which it would be idle for any one to offer an opinion before the matter has been fought out in a court of justice.

We have, then, three things necessary to establish any claim on the proprietors of a mine in the case of a man killed on his works. Negligence on the part of proprietor or authorised servant must be shown, to the satisfaction of a jury, to have produced the accident. This involves, first, proof of the negligence, and secondly proof of the agency. Third, is the limit of maximum damages, which, for the reasons hinted above, we can hardly estimate at more than 200l. in each case. Such would be the outside to be obtained by those who take the advice not to contract themselves out of the Employers' Liability Act.



because, as it happened most unfortunately in the issue, the advantage of his efforts eventually accrued wholly to others, and to the nation, and, alas! in no degree to himself.

#### LAMBETH UNDER WATER AGAIN, AND HOW TO PREVENT SUCH A CALAMITY.

In writing the other day of preventable causes of human misery, we omitted one which, while strictly local in its incidence, is in other respects probably more inconceivable than any of those to which we referred. We allude to the extreme of misery, involving loss of property, personal suffering, and injury to health, which has been experienced by many inhabitants of South London at the very time when they were least able to resist the shock. The sudden arrival of an unusual snowstorm, together with fierce east wind and low temperature, has been itself a trial to many a hale and hearty man. What is it, then, to the women and children who have been turned out without a minute's notice to face it, turned out by the neglected and outraged river, which was once the pride and glory of London?

It is not for us to attempt to indicate where the blame lies. But that some one must be to blame for the wanton and persistent neglect, in spite of warnings chronicled in our own pages, which has wrought such terrible calamity, we cannot doubt. It is not as if any new thing had happened. It is true that the height attained by the river Thames on the 18th current was one hardly to have been expected on that particular day. But it might have been regarded as far from impossible a tide or two before it really occurred, a little nearer to the full of the moon. It was not an unprecedented rise. So far from that, according to published accounts, it was some 6 in. lower than a flood that occurred in November, 1875. On that occasion we entered at some length into the subject, pointing out the means by which safety might for the future be ensured. On not a few subsequent occasions we have called attention to the gradual change which is occurring in the Thames, a change to the advantage of the river as a navigable channel, but calling for certain precautions as to the riverine residential property. Alas, it has been of no use! It takes repeated shocks to stir the English public. When stirred, no doubt, it goes to work with a will; but it is too often the case that warnings are neglected, and that something worse than warning has to recur before those steps are taken which, if taken in the first instance, would have prevented much suffering and loss.

It ought to be now well known that a spring-tide may, at any time, occur in London with a rise far above that pointed out as due in the tables of the Admiralty. This fact is in full evidence. It has been brought before the Institution of Civil Engineers. It has been brought before the Select Committee on the Thames Floods Prevention Bill. By the term Trinity high-water mark we indicate the height which was reached by the flood-tide of the Thames at the commencement of the century. This height allowed for a range of 20 ft. or thereabouts between highest ebb and lowest flood. But within the last five years the tide has been known to ebb to 3 ft. 2 in. below, and to rise to 4 ft. 7 in. above, the 20 ft. range. In fact, it has attained a maximum range of 27 ft. 9 in. instead of an inch or so over 20 ft. And these extraordinarily high and low registers are on the increase, both in number and in dimension. The flood of the 18th instant was by no means the highest hitherto attained. It was, as far as we can tell, some 6 in. less in height than those that may possibly occur on the 17th or the 31st of next March, or on the 16th of next April; or, indeed, as this experience shows, at any spring-tide when there is a violent wind driving the flood-wave up the river.

As to the measures to be taken for the protection of London from this fearful calamity, no engineer of any eminence can have any doubt. The only difficulties that have opposed the proper protection of the low-lying districts are administrative, not mechanical, or, rather, hydraulic. Into that we have entered before. We do not know that we can do much good by going over the ground again. Unless a sufficient amount of public indignation be excited by the recent misery to make the Metropolitan Board, or whoever may be the proper authority, exert itself, the voice of the press will be neglected. And, if that indignation arise, it will find its own channels of utterance.

We confine ourselves, therefore, to the thankless duty of pointing out a manner of enabling South London to take care of itself. In the present state of the quay walls and other defences of the river it is possible to prevent overflow at a given height, if sufficient warning can be given. On the last occasion on which flood was anticipated, men were in readiness with planking, clay, and other materials to raise those 10 in. or 20 in. of dam at the low parts of the quay walls which would be enough to keep out the tide. The mode, no doubt, is clumsy; but it may be made effective. The fear is, that the cry of "Wolf" may be raised so often, that when the wolf comes, as it did with a vengeance on the 18th inst., no one may be on the look out. And it is pretty clear that all theoretic warnings, such as so often make their appearance in the newspapers, only tend to confuse the minds of those to whom they are addressed, and thus to render prompt action in real time of need more difficult.

But it is perfectly easy to give a notice of from two to two hours and a half of a coming flood. Such a notice, if all things are kept in due readiness, would be ample for the protection of Lambeth. It is but the crest of the tide against which it is necessary to erect a barrier. When the crest once breaks over the bank, it soon makes a breach through which the river itself may rush; but the difference between safety and danger lies within a few inches, and a timely barrowful of clay may save a city from flood.

What is requisite is to erect one of those instruments which the Italians call hydrometers, or fluvimeters, and which we call tide gauges, at a proper spot near Sheerness. We know already approximately to what height a tide will rise at London that has attained a certain height at Sheerness. A series of observations of the heights of tide at the Sheerness hydrometer and at London Bridge, together with records of the force and direction of the wind, and of the height of the barometer, would enable us to predict with extreme accuracy the movement of every tidal wave. A danger mark would then be drawn on the Sheerness hydrometer. It would be only necessary to watch this line at certain tides, as near the neaps the danger would not occur. The moment the danger line at Sheerness was touched by the flood tide, telegraphic news should be despatched to a station provided in London. News would immediately be sent to the spots where danger is known to exist, and to those where the means of temporary defence are in readiness, and Lambeth need never again be under water.

If the funds already collected for the relief of those suffering from inundation be insufficient for or inapplicable to, a prevention that would be better than any kind of cure, we beg to suggest that a public subscription should be made in order to provide a warning tide-gauge at Sheerness. The method has for some time been in use on the Po, and terrible misfortunes have thus in several instances been avoided. The remedy is simple. But so is the evil. None the less is the latter one involving cruel disaster.

It is a disaster wholly preventable, and one which, at the next equinoctial spring, may recur if the measure we recommend be not at once adopted, pending the execution of those permanent works of protection which ought to be at once taken in hand.

Since the above was in the printers' hands, it has been stated at the Metropolitan Board of Works that the flood of the 20th January rose 8 inches higher than on any previous occasion. If this be the case, it is a strong comment on our statement that the tidal range is on the increase; and only renders more imperative the erection of a warning tide-gauge.

#### ARCHITECTS AND SANITATION.

ARCHITECTS seem to be just now unmistakably manifesting their interest in sanitary science. The number of those who attended the reading of Mr. Robins's comprehensive paper on the subject at the Institute, a month ago, and the number of those who followed it with keen attention, was a significant indication that the importance of that branch of science and practice is better understood than it was.

Another and a very practical proof has been given by the co-operation of architects in the establishment of the Sanitary Assurance Associa-

tion. In the *Builder* an account was given of the public meeting at which this Association was definitely started, though it had been for some time previously in course of formation. Since then the articles of association, which have received the provisional approval of the Board of Trade, have been settled, and one of their provisions is that the executive council, which consists of eight members, shall always include not fewer than two architects, as well as two medical men. The honorary council,—a body comprising many men of distinction,—includes the names of well-known architects, and, in fact, this association, aiming as it does to improve the sanitary condition of the dwelling-houses of London, proposes, to a large extent, to reach them by the help of those who are professionally connected with them, and concerned for their owners,—the architects of London.

Of course, to a certain extent, the work which this Association and the kindred society which has been since brought before the public propose to do, is work which many architects are, from time to time, called to do for private clients, in the way of setting right the drainage of old houses, and which all are bound to do in planning the drainage, &c., of new buildings; and it is not proposed or supposed that architects should, or would send their own clients to the surveyor of a public body in preference to doing the work themselves. But many cases arise in which, from various causes, an architect would prefer to recommend a specialist to set to rights defective drains, just as a specialist is often called in to arrange hot-water apparatus and even ventilation. Many cases also occur in which an architect can require sanitary improvements, and cannot possibly design or superintend them. For example, on leasehold estates the time is now come when, in connexion with renewals, and even original lettings, the professional man having the care of the property may most reasonably require the houses to be so built,—or, if old ones, so altered,—as to be satisfactory in their sanitary arrangements. In such a case as this, and in many parallel cases, a Sanitary Assurance Association will offer the means of obtaining, at a moderate and definite expense, a specification of the defects,—where defects exist,—and of the work to be done to remedy these, an inspection of the work accomplished, and a certificate of the condition of the building.

It has been intended, as far as possible, to bring architects and medical men together in the inception and carrying out of this undertaking; and it is not too much to ask that the architectural profession, and the many surveyors, builders, owners of house-property, and others, who are accustomed to trust architects in their dealings with their property, should give attentive consideration to the proposals of the promoters of the Sanitary Assurance Association, as being intended, to a large extent, to represent architects in the great struggle now going on to secure some improvement in the sanitary condition of this great metropolis.

#### THE INSTITUTION OF CIVIL ENGINEERS AND THE WELFARE OF LONDON.

A POWERFUL auxiliary now offers its aid to the various associations and individuals who are engaged in the conflict, to which we referred in our last number, with preventable evils. The Institution of Civil Engineers commands an annual sum of above 400l., provided for the encouragement of essays on professional matters. Among the subjects which they have proposed for the ensuing session are several that bear directly on the removal of some of the chief causes of distress that have been so prevalent of late. Among these are "the measures hitherto taken, and still necessary, for the relief of the Midland and Eastern counties of England from floods," and "the prevention of smoke from furnaces and domestic firegrates." We rejoice to see these two timely notices. It will be remembered that not only are they calculated to elicit the best practical information attainable on the subject in the form of essay,—for every good essay will receive a premium,—but that, in case of any noteworthy communication being received, there is pretty sure to be a debate on the subject, in which all the experience of members present will be represented.

At the same time, we mark with regret the statement of the Council that there has been a falling off from the standard of papers received

from students, insomuch that out of the fifty papers last sent in, it has been necessary absolutely to reject sixteen, while of the remaining thirty-four, twenty only have merited recognition.

It is probably owing to this that we observe the re-appearance, in the list of subjects, of not a few that were proposed last year. Among them is "The Resistance of Traction of Vehicles on Roads," which we are happy to see now accompanied by "The Comparative Cost of Transport by Land and by Water," a subject of the urgent importance of which we called attention on the occasion of the last report. The flow of water through pipes and conduits, the mechanical separation and chemical treatment of sewage, the modes of regulating storm-overflow from sewers, and the flushing of sewers, the methods used for determining the discharge of rivers, the works carried out on the Continent of Europe for the improvement of rivers, and of inland navigation, the construction of tide gauges and the mode of making tidal observations, the best mode of testing steam-engines, the use of compressed air as a motor power, the loss of power by friction, the value of different classes of lubricants, the methods of working deep coal-mines, coal depôts for ocean steamers, the methods of securing mineral workings, the management of underground water in mines, and the employment of the electric current for the transmission of sound, are among the subjects proposed now, in repetition of their proposal last year. It must be admitted that the field is large. But when we observe that the number of members of all classes on the books has risen from 2,960 last year to 3,082 in the present year, we can hardly doubt that much valuable professional information will be elicited by the appeal of the Council. There is ample scope for records of the experience of the engineer in widely differing parts of the field of his exertions. If we insist on the special value of the three subjects of the regulation of floods, the prevention of smoke, and the determination of the cost of different descriptions of traffic, it is because we feel these points to be not only subjects demanding the highest professional skill and experience in their treatment, but because they more intimately affect the life and health of London than almost anything in the list, unless we except the treatment of sewage.

#### ON THE WALLS OF OUR ROOMS.

In artistic matters as well as in political, there is always a tendency to rush from one extreme to another. This is, however, more excusable in the latter than in the former sphere, because art is based on fixed principles, whilst politics are concerned with changing circumstances and events. At the present time the tendency in all matters which are concerned with houses is to rush into the opposite extreme to that which prevailed a certain number of years ago. There is a preference for beauty, or what is supposed to be beauty, to utility without a due appreciation of artistic principles or practical requirements. This in a small way is exemplified by the silly fashion of having small panes of glass placed in new houses built after old-fashioned models. We have nothing, of course, to say against houses designed with a view to please the eye, but it would be amusing if it were not sad to see how small is the true appreciation of propriety or even of beauty when such an admirable production as that of modern plate glass in large sheets is discarded for bottle-glass panes a few inches in diameter. Internally, again, the same want of a steady regard to artistic principles is visible, and a tendency to be run away with by a vague impression that certain fashions which some artistic people happen to have adopted are necessarily desirable. It is in consequence of this weak-headedness that so many persons cover their walls with plates and dishes of china. Obviously the proper place for a plate or dish is on a table, and obviously also its primary object is utility. This utility consists of being placed on a table to hold certain things, and no plate or dish was ever intended to be hung on the wall of a drawing-room, certainly not in regular sets up to the soup-tureen, as may be seen in some houses. We are not, let it be noted, in any way protesting against vases or other pieces of domestic ware being placed on tables or shelves in moderation where their colour, if they have a colour, helps to light up a room, or where some delicate painting on them may be carefully

observed. But domestic china, as a rule, is not fit to adorn a wall. It possesses no beauty of form, nor the breadth of colour and design to permit it to compete with pictures. An exception may be made in favour of the genuine Wedgwood ware, the designs by Flaxman, and the competent artists who were employed by Josiah Wedgwood and Bentley; and be it noted how thoroughly these able men understood their business, for such china as they intended should decorate the walls of rooms was issued from the Staffordshire potteries in the form of plaques or medallions. Therefore we hope that all sensible decorators, whether they be professionals or amateurs, will take care to inform any so-called "high art" person who may wish for their advice that the decoration of walls with domestic china is inartistic. It is, in fact, only the swing of the pendulum in the opposite direction to which it rushed fifty years ago.

Moreover, we entertain great doubt whether persons who have to consider the decoration of rooms sufficiently regard the functions of walls. A wall must, generally speaking, be a mere background, and therefore it must be decorated as far as possible in such a way as to throw up the foreground. In some sense pictures must be considered a part of the foreground, and therefore where the owner of a house possesses pictures worth looking at, the object of the decorator should be, as far as possible, to make the wall so negative in character as not to attract the eye, but to allow it to be attracted by the pictures, the ornaments, and the people. Hence, where there are pictures, large patterned papers or papers of any kind are undesirable, and a wall painted or distempered green, buff, or gray in such shades as may be best suited to the situation of the house, is to be preferred. Elaborate patterns broken by pictures bring the reverse of harmony into a room, and if statutory, whether in the shape of marbles or bronzes, be part of the ornaments of a room, a patterned paper is very fatal to all good effects, and quite puts an end to the simplicity and dignity of sculpture. But undoubtedly, if a room is not adorned with pictures or graceful ornaments, then some kind of pattern on a paper may be desirable to break the monotony of a blank wall, but no one who has noticed the effects of flowers or ferns against a plain green or gray wall can fail to see how infinitely preferable is an unpatterned wall for bringing out the beauty of natural or artificial objects. In these days, when engravings and etchings are within the reach of most, not to speak of autotypes and other reproductions, we are inclined to believe that in entertaining-rooms, as they are called, the day for patterned papers has passed. In bed-rooms it may be different; neatness and the appearance of comfort may be given by light and sensible-patterned papers, conventionalising as far as possible natural objects, which are always graceful, rather than artificial patterns, which are generally quite the reverse.

Again, in bed-rooms, generally speaking, the occupant does not spend the amount of time which he does in a drawing-room or library, and therefore it is obviously desirable that, in these latter rooms, he should not always have before him on all sides a pattern staring him in the face which it is quite impossible can ever be "a thing of beauty" or "a joy for ever." It will, indeed, like the thing of beauty of which Keats wrote, "never pass into nothingness," but when we look round scores of drawing-rooms, how much do we desire that a monotonous lozenge or a stiff *fleur-de-lis* would entirely disappear from our view. Far better is the plain and simple wall on which the eye rests with refreshment till it glances to the water-colour of the summer sea or the misty mountain, whilst in graceful form below stand out the graceful flowers, all

"Full of sweet dreams, and health and quiet breathing," to quote again the words of the same youthful poet.

It is our walls, indeed, which should be in our houses our greatest satisfaction, whether by recalling the scenes of the past or charming the eye now with rest and now with pleasing colour.

**Royal Albert Hall.**—An Assault at Arms in aid of the Afghan War Relief Fund will take place on Tuesday next, at half-past two p.m. We hope it will prove as satisfactory in the result as the one held last year.

#### PARSONAGES.\*

THERE is no essential difference between the houses of which I have now to speak to you and those occupied by laymen of moderate means. A good parsonage would certainly constitute an admirable house for a gentleman whose income corresponded with or slightly exceeded that of the benefice to which the house was appropriate; while, owing to the difficulty in obtaining a site and to the limited nature of the funds available, it is not infrequently found better to buy an existing house for a parsonage than specially to build. A great deal, therefore, of that which I have to say will be just as applicable to a small house for a gentleman as to a parsonage, and I thus may venture to ask the attention of those who may regard a parsonage itself as not within their probable line of practice. I may here mention that you must understand me throughout as speaking primarily of country parsonages, standing in their own grounds, though much may be incidentally applicable to town houses. It is, however, manifest that in a house on a confined site in a town, probably with a party-wall on each side of it, you must give up features after feature which enters into an ideal you may have some hope of attaining very near to on an open site. Moreover, the great majority of town clergy live, like the rest of us, in houses set out without regard to aspect, on sites artificially cleared, and so deprived of any features that may once have belonged to them, mechanically planned in mere imitation of adjoining houses, executed with a sole regard to cheapness, and without the most distant sense of beauty ever entering the designer's head,—and with regard to which a consistent public first carefully abstains from employing any architect, and then turns at intervals, as when pipes are found to be burst at the break up of a frost, and abuses our unfortunate but innocent profession. Town houses or parsonages would constitute a sufficient study for an evening here in themselves. It is inevitable, moreover, that my experience, being so largely gained in a southern agricultural and seaboard county, should give some tinge to that which I have to say this evening.

Parsonages differ from other houses not, as I have said, in essence, but in the accidents which surround them and give them any special character they may prove to have. These may be grouped under two heads,—first, their tenure; and second, the sources whence funds for their erection are raised. Parsonages do not belong to the parish, nor to the Church, either diocesan or general; in fact, there is no such body as the Church in any such legal sense as to be capable of holding property. The parsonage, glebe, and other property of a benefice belong to the incumbent, rector, or vicar, in right of his benefice,—not as a trustee, or in the same way that the freehold of the churchyard vests in the incumbent and gives him a vote for the county, but absolutely. Every incumbent is a corporation sole, that is, a corporation consisting of one person, with power to hold property and by his acts to bind his successors. He has a power of acquiring property, as far as I know, unlimited, and a power of selling, exchanging, and even of giving away, but these powers are regulated by recent statutes, and the last, I believe, was created by them and limited to such public purposes as providing sites for schools or the endowing new benefices. The bishop, as representing the Church, and the patron, in the interest of the next incumbent, have to be parties to nearly or quite all such operations. Although the incumbent has power to build, enlarge, or do anything else to improve the benefice at his own expense, or out of funds placed at his disposal, there are so many points likely to arise in which the consent of the bishop and patron are required that it is always well, before beginning to build, that they should be apprised of the fact, and probably that their approval of the plans should be asked. On no point are they more likely to be anxious than that the buildings should be appropriate to the benefice; and I find it is a consideration always present to the mind of a building incumbent that he must build in such a way as to be appropriate not to himself only, but to those unknown successors in the benefice whose requirements he has difficulty in realising. The more general information of the architect enables him to help his client in satisfying his conscience in this par-

\* A paper by Mr. Lucy W. Ridge, Surveyor of Ecclesiastical Disputations in the Diocese of Chichester, before the Architectural Association on the 23rd inst., is elsewhere mentioned.

ticular. It is a very common remark that the clergy over-build their benefices, that is, put up houses and buildings beyond anything the revenues of the benefice will enable a man to occupy and use, or even keep in repair. The greatest delinquents are those who seem to desire to add as much as possible to the number of their buildings, regardless of the quality of the materials and the soundness of construction. Bad building is entirely out of place on a glebe, and the lightest penalty one can wish for those who offend is that they may outlive their shanties, so that the dilapidations which must accrue thereon may be paid for by themselves, and not come as a burden on their successors. If, on the other hand, the buildings be sound and substantial, and fairly well adapted to their purpose, their being in excess of the absolute requirements of the benefice is not always an evil. There are, of course, livings in crowded places with unpleasant surroundings which it is difficult to imagine any one with considerable independent means accepting, and to saddle a man who looks to his professional income as a means of maintenance with a large disproportionate house is bad, as being in itself a cause of outlay which it would be well should be avoided, and as a temptation to extravagance. Where, however, the surrounding country has attractions, and where there is good society, a good house attracts men who have private means of their own, to the undoubted advantage of the parish; and in cases where the work is not too heavy, a large house well situated may be a considerable source of very legitimate income from its enabling the incumbent to take pupils. I know instances of livings in which the income is nominal,—some 50*l.* or 60*l.* per annum,—and in which a good house and grounds in a pleasant neighbourhood secures a succession of hard-working, though necessarily rich, incumbents. On the other hand, with considerably larger income, where the house is poor it is difficult in these days to fill a benefice. There are few cases, I think, therefore, in which a good-sized house is not of advantage to a living, though I believe stables, cottages, barns, sheds, and out-buildings generally should not be increased beyond that which is found to be absolutely necessary. Though I am in a position to assert that the popular idea which attributes universally to the clergy large families is a fiction, still it may be anticipated that sooner or later there will come to each living a man who will, with the venerable Vicar of Wakefield, have entertained and acted upon "the opinion that the honest man who married and brought up a large family did more service than he who continued single and only talked of population." Should it be your fate, therefore, to build for a bachelor or for a man whose immediate requirements are small, or when funds are limited, it is only right to remember that each new incumbent (or even the present one) may want to enlarge. If, therefore, you can furnish space in roofs which may hereafter be converted into attics, or otherwise prepare for this contingency, it will be well to do so. It is right also to expend the funds available in making the main house as commodious as possible, leaving it to future times to add bays, porches, and other similar features, which can be put on at any time. In some instances I have gone so far as to put in the girders for the openings into the future bays. A new parsonage should, therefore, be elastic, and this is, I believe, even more important in those cases where the work is light and the income of the benefice small.

Another point arising from the peculiar tenure of church property is the position of an incumbent with regard to repairs. He is landlord as well as tenant, and hence is liable for substantial repairs, and, if the necessity arises, even for re-building. The principle is recognised that the Church shall receive no damage during each man's incumbency, and hence there is no allowance for wear. Each man is to hand on the possessions of his benefice in as good a state, at least, not only as that in which he actually received them, but as that in which he should have received them, it being expected of each incumbent that he should recover from his predecessor dilapidations to the full extent to which the buildings had been allowed to deteriorate. This system came to be adopted because there was no other process for enforcing the duty of repairing,—the difficulties connected with which are certainly not confined to ecclesiastical property,—except, indeed, that in very extreme cases the patron might invoke the uncertain interference of those extraordinary

ecclesiastical courts which constituted one of the greatest grievances of pre-Reformation times, which passed unreformed through the Reformation period only to find themselves ignored by the laity, and which, having in recent times been passed through a process of bungling and ill-tempered legislation, have only survived,—if, indeed, they have survived,—to find themselves set at naught by the clergy. No wonder dilapidation questions were taken to the civil courts. The judgment in the leading case of *Wise v. Metcalf* lays down the law as stated above, with this addition,—that incumbents are not to be called on to maintain anything which is matter of ornament and luxury. From all this it follows that our workmanship should be thoroughly sound and good; that, though there need be no limit to the beauty we may attain to by good outline and proportion, there should be an almost total abstinence from ornamental features, and certainly from all architectural frivolities, the absence of which should, indeed, be suggested in any case by the staid characteristics of the class for whom parsonages are built and the circumstances under which the money to be expended is usually raised, which render culpable any outlay for which there is no useful result. The courts having held that internal papering and painting are merely decorative, it will be found convenient to omit the former, which cannot be executed till long after the building is finished, from the building contract, though with regard to the painting, I have never yet found any one strong-minded enough to follow the decision of the court to its logical conclusion, and leave internal work without paint, or its equivalent, staining and varnishing. Avaries, observatories, conservatories, &c., are matters of luxury which incumbents are not called on to maintain, and must not be included in works to be executed with funds supplied from a public source. An incumbent is entitled to claim as his personal property the same class of fixtures as any other tenant, except that of lease years the Ecclesiastical Commissioners and Queen Anne's Bounty Board have remitted that stoves, ranges, copper, and other more important fixtures, should be included in specifications approved by them, and in such cases they go with the freehold.

We have next to consider those specialities which affect parsonage building, owing to the source whence the funds are supplied. These are as follow:—

1. The Patron. The person who owns the advowson represents the founder of a benefice, that is, the person who first set aside the endowment for the use of the incumbent, and hence there is a claim on him from time to time to supply, or assist in supplying, anything that may be needed. This is generally recognised. The Lord Chancellor, who is a great patron of small livings, has a special fund whence he makes grants for building. A great deal of the episcopal patronage accorded to the bishops at the time when the corresponding property went to the Ecclesiastical Commissioners, and in such cases the Commissioners recognise the claim. Private patrons generally contribute towards buildings for the use of their benefices.

2. Public Subscriptions. These are, of course, pure voluntary donations, whether they take the form of direct gifts, or of grants from diocesan or other societies.

3. The Ecclesiastical Commissioners. One of the objects for which the surplus of the revenues of the bishops, deans, and chapters, and the property of the sinecure offices in cathedral churches, were handed over to the Ecclesiastical Commissioners, was to supply parsonages, so that the parochial clergy might duly reside on their benefices. Lucky is the parish where local claim or other sufficient cause induces the Commissioners to make the full grant of 1,500*l.*, a sum sufficient to render comparatively easy the collection of funds for the erection of a good house. The systematic attempt to provide parsonages throughout the country naturally led to their requirements being studied. In this work the Commissioners have been assisted for very many years by an architect than whom no one more thoroughly commands the confidence of his professional brethren. This it is that will give the value to the more practical portion of this paper, when we come to consider in detail the requirements of a parsonage as set forth by the Commissioners.

4. Queen Anne's Bounty. The Governors of Queen Anne's Bounty make grants, in sums of 200*l.*, towards building houses out of the tithes and first-fruits made over to them by the

Crown. The great use, however, of the Bounty is as a loan society, whereby an incumbent, whose interest in his living is limited, and may, in fact, cease at any moment, can borrow for building works, not on his own security, but on that of the benefice. This, by removing the temptation to build badly for temporary purposes only, has done very much to provide good parsonages. The money, of course, really comes from the clergy, because they have to pay it off in thirty years, with interest, at the not very moderate rate, considering the perfect nature of the security, of 4 per cent. Their requirements as to buildings correspond with those of the Commissioners. They retain as required by their Acts of Parliament, an old-world system of affidavits to be taken by the architect or surveyor; they want a statement of estimate on a form which, when you have got your builder's tender and know exactly what you are going to spend, it will take a good deal of anxious arithmetic to fill up for the first time; and have recently added a demand for bills of quantities *priced*, which is information an architect does not happen to be in a position to furnish. Considering you have sworn to the estimate, the necessity for the bills of quantities in enabling the Governors to judge of the propriety of the loan is not apparent.

Lastly, the clergy themselves contribute very largely to the parsonages and other buildings on glebes. In nearly every case some balance is paid in this way, and it is no unusual thing for a man to lay out considerable sums in improvements entirely at his own expense.

It is not unimportant to notice that no funds whatever are supplied by the State for this purpose. Neither public taxation nor local rates contribute anything whatever; the money is raised either by private donation or by the transfer of funds belonging to ecclesiastical offices, now considered to be obsolete or over-endowed, to more useful purposes. The State has no more right in parsonages than in any other form of private property, or at most than in such things as railway works, which have been from time to time the subject of Parliamentary legislation, but belong to private owners. This is not only true of modern parsonages, but of old ones as well, for they were at no time supplied from any other than private sources.

The oldest parsonage with which I am acquainted is at West Dean, situate in a hollow of the South Downs westward of Eastbourne. It is a long, two-story building, built of stone, with two-light windows with rebates for casements or shutters, a chimney-stack, and circular staircase. It is illustrated in Turner & Parker's "Domestic Gothic," and in the "Transactions of the Sussex Archaeological Society." It had apparently but a single room on each floor, though there may have been movable partitions. It is now fitted up and used as a cottage. I know of no other complete Medieval parsonage.\*

## THE VICTORIA TERMINUS, LONDON AND BRIGHTON RAILWAY.

### NEW WORKS AND IMPROVEMENTS.

DURING the past few months extensive new works of a varied character have been in progress at the Victoria Terminus of the London and Brighton Railway, with the view of materially improving the structural character of the station, and adding to the general convenience and accommodation of the traffic. Amongst other works of this nature, the entire area of the roof of the terminus has been renewed, and reconstructed on a new principle, by which both additional light and ventilation has been obtained. The roof, which is 700 ft. long and 250 ft. wide, is divided into fifteen bays. In the old roof the lanterns were covered with glass and the sides with slates; but in the construction of the roof which is now approaching completion, slates have been discarded, and in their place other materials introduced, glass and boarding forming the sides of the bays, and what were the lanterns being covered with zinc. In the progress of this portion of the work about 36,000 feet of glazing have been used. No outside putty is used, and the glass is left free for expansion. The introduction of this system has already proved advantageous, as, although the greater part of the station has been glazed for some time past, there are as yet no breakages whatever. In the restoration of the roof, all the ironwork has been thoroughly cleaned and

\* To be continued.

re-painted with Astbury's patent oxide paint; all defective portions of the iron having been renewed. One of the most important structural works in connexion with the renewal of the roof has been effected at the end adjoining the booking-offices. At this point two large steel girders have been erected, designed to take the principals of the roof of the end bays, thus removing from the front of the booking-offices the weight of the roof. This portion of the work was attended with peculiar difficulty, in consequence of the traffic having had to be uninterruptedly continued during its execution. These girders are respectively 120 ft. and 130 ft. in length, and 10 ft. 6 in. deep, and rest on two cast-iron stanchions, each weighing 6 tons. The foundations for these stanchions are composed of concrete and brick, with a basement of Bramley Fall stone, 18 in. in thickness. The girders were made at the Nine Elms works of the contractors, and are composed entirely of Westdale steel, with the exception of the rivetting portion, which is from the Low Moor Iron works.

In addition to the works inside the station, above described, an iron and glass carriage-shelter has been erected outside, at the approaches to the station. It consists of a hip roof in five bays, being 220 ft. in length, and 42 ft. in width. The weight of each bay is carried by four cast-iron hip rafters, bearing against cast-iron compression beams at the top, and against columns at the base, wrought-iron lattice girders forming the ties. A moulded cast-iron gutter is fixed on the top of the girders, and the whole of the sides of the arcades are covered with Hartley's rough plate glass. The square at the top of each bay is boarded and covered with zinc, and surmounted by a cast-iron cresting. The columns have fluted and reeded shafts, with foliated capitals and bases, the bases being made specially large in order to prevent vehicular traffic from fouling the columns. The lattice girders are filled in with light iron scroll work.

Other works are likewise in progress at the station, including the formation of cellars under the platform protected by the carriage-shelter. The walls and floors of these cellars will all be composed of concrete, the ceiling of the cellars, which forms the platform, being also of concrete on iron joists, and the surface of the platform having a layer of asphalt 1 in. in thickness. A new covered entrance for cabs is likewise being constructed from Eocleston Bridge. It should be added that much additional light has been thrown into the area of the station by removing the wooden louvres from the screen in front of the booking-offices, and substituting glass.

The whole of the works are being carried out under the superintendence of Mr. H. E. Wallis, C.E., of Palace-chambers, Westminster, who has been entrusted with the work by Mr. F. D. Banister, engineer-in-chief of the company; and the contractors are Messrs. H. Young & Co., of the Eocleston Ironworks, Pimlico; the engineer in charge of the work being Mr. Orange. The zinc used in the works has been furnished to the contractors by Braby & Co., Limited. The estimated cost of the several works is from 15,000l. to 16,000l.

#### PROJECTED RAILWAYS, TOWN IMPROVEMENTS, AND OTHER PUBLIC WORKS.

The investigation of private Bills is likely to occupy a considerable portion of the time and attention of Members of Parliament during the present session. The number of railway and other Bills for public works is 232, in addition to which there are 77 applications to the Board of Trade for provisional orders for the execution of works of a similar character, of which 35 are in respect of tramways, 19 for new gas and water works, and 19 in connexion with the construction of piers and harbours. Of the 232 Bills first named, 109 have reference to railway works, 18 to tramways, 31 water and gas works, 17 for harbour, dock, and port works, 24 for town improvements, the remaining 33 being Bills relating to works of a miscellaneous character.

No fewer than twenty-nine of the Bills are in connexion with projects affecting the metropolis, of which thirteen relate to railways. The London, Chatham, and Dover Company have three Bills, one of which seeks powers for the construction of a new bridge over the Thames at Blackfriars, in order to increase the accommodation for the suburban traffic of the company. We last week expressed our opinion of this project. Another of this company's Bills is for making a new line of railway between Greenwich

and Blackheath. The London and South-Western Company apply for powers to still further enlarge their Waterloo Station, and also to widen and otherwise improve the Vauxhall Station. The London and North-Western Company apply for powers to alter the levels of Euston-grove, and to build a bridge over Drummond-street, in order to connect the Euston Station with their hotel opposite. A new company calling their undertaking the Fulham District Railway, apply for powers to make a new line from the Metropolitan District Company's railway, at Fulham, to Hammersmith. Another new company seeks powers to construct a railway from the Crystal Palace High Level Station of the London, Chatham, and Dover Company, to the Ladywell Station of the South-Eastern Company's Mid-Kent line. The Metropolitan District Company apply for powers to make junction lines at West Brompton and Hammersmith, and also to extend their line of railway from Ealing to Hammersmith. A new company have a Bill seeking powers to construct a railway from Guildford and Kingston to the Metropolitan District Company's railway at Fulham. The Great Eastern Company apply for powers to widen the North Woolwich branch from Stratford Market to Canning Town. The Metropolitan Company have a Bill for powers in connexion with the construction of the Inner Circle Completion railway, and also apply for powers to widen the Metropolitan and St. John's Wood line. A new company likewise have a Bill sanctioning the construction of a dock on the Thames, at Bugeby's Reach, Greenwich, with a railway in connexion with the South-Eastern Company's line.

The miscellaneous Bills connected with the metropolis include, amongst others, several promoted by the Metropolitan Board of Works, and by the City municipal authorities. The Metropolitan Board of Works are promoters of Bills in reference to the proposed new bridges across the Thames, street improvements, house occupation by the labouring classes, and the purchase of interests on Hackney Common. The New Bridges Bill contains clauses providing, in connexion with the proposed new bridge between Fulham and Putney, for the removal of the aqueduct across the Thames belonging to the Chelsea Water Works Company, and in lieu of it constructing a conduit or pipe line within the roadway of the bridge. The Bill relating to artisans' dwellings contains a clause to alter the section of the existing Act which prohibits the Board from "taking for the purposes of the Act fifteen houses or more occupied either wholly or partially by persons belonging to the labouring classes until sufficient accommodation has been provided for the same number of persons elsewhere," upon the lands named in that section, and to remove or alter the restrictions imposed upon the Board. The Bills promoted by the City authorities include one relative to artisans' dwellings, in which power is sought by the Corporation to borrow money and make loans to the Commissioners of Sewers; and another Bill in which power is sought for the purchase and exchange of land on the Thames Embankment. There is likewise a Bill to Amend and Enlarge the Provisions of the Metropolitan Open Spaces Act of 1877, and to enable the Metropolitan Board of Works and any vestry or other parochial or local authority and the Corporation of the City, to acquire any open spaces within the limits of the metropolis, and devote them to public recreation, the Bill providing that disused churchyards, burial-grounds, and cemeteries shall be treated as open spaces. A Bill creating a London Water Authority contains clauses empowering such authority to purchase the London water companies, and also, if necessary, to obtain other sources of supply. There is also a Bill seeking powers to bring a supply of seawater to London, from Lancing in Sussex, by means of pumping-stations, conduits, and reservoirs along the route, the works terminating in Fulham, Battersea, and Hammersmith; likewise a Bill for supplying spring-water to the various localities in South London, by the construction of pumping-station and other works in the parish of Basing, in the county of Hants, and other works in the counties of Sussex, Surrey, and Kent, the works terminating in Bantland and Tocking. The Cadogan and Hans Place Estate Company have a Bill seeking powers to make a new street, 140 ft. in length, from the west side of Sloane-street, opposite the south end of Cadogan-place, to the east side of Pavilion-road. The South Metropolitan Gas Company have a Bill for powers to construct new works and buildings on Greenwich Marshes.

A company proposed to be incorporated, called the London Suburban Market Company, are the promoters of a Bill, in which powers are sought for the construction of a market, slaughter-houses, shops, offices, and other buildings in Chiswick, for the sale of live and dead stock, horses, and other animals; hay, corn, and other cereals; fruit, vegetables, fish, meat, and other marketable commodities. The company propose to acquire 18 acres of land, for the purpose of erecting the market buildings and forming the grounds. In addition to the purchase of the land named, it is likewise proposed to lease twenty arches belonging to the London and South Western Railway Company, and also to take leases of adjacent grounds.

Under the title of a "Sectional or Block Buildings Management Authority," a company of a novel character, proposed to be incorporated, apply for an Act, in which powers are sought containing provisions for the management of buildings divided into separate tenements, and for facilitating the sale of such tenements. The clauses of the Bill provide for the management of buildings constructed in flats, sections of flats, sets of chambers or offices, also powers to the company to purchase rights of such buildings or sites for buildings, and powers to public bodies or local authorities to sell such rights to the company.

Amongst the Bills for proposed new works in different parts of the country there are several connected with the railways, the London and North-Western, Great Western, Midland, South-Western, Great Eastern, and other of the leading companies being the promoters of Bills of a very comprehensive character in connexion with their respective systems.

The town improvement projects include those at Leicester, Birkenhead, Barrow-in-Furness, Bingley (in Yorkshire), Staleybridge, Bradford, Salford, and Newcastle-on-Tyne. In all these several Bills, powers are sought for increased control over the construction of buildings and sanitary arrangements, together with powers for new and widened streets, several of the sanitary powers applied for being of a very stringent character as regards the occupation of underground dwellings and otherwise unhealthy houses. The Staleybridge Bill, amongst other provisions, contains clauses empowering the Corporation, in conjunction with the authorities of Ashton-under-Lyne, to purchase Stamford Park, belonging to the Earl of Stamford, and to convert it to the use of the public; whilst the Bill promoted by the Birkenhead Corporation includes clauses sanctioning the erection of a new town-hall, municipal offices, court-houses, police-stations, and other offices for public purposes; and also the formation and erection of public libraries and museums, and the erection of public baths and washhouses.

#### A COMPREHENSIVE TRAMWAY SYSTEM FOR LIVERPOOL.

The Corporation of Liverpool, who have themselves undertaken the work of constructing and having control of the whole of the tramways within the boundary of the borough, have (as already mentioned by us) lately decided upon applying to the Board of Trade for powers to lay down new tramways along several of the thoroughfares throughout the borough, to the extent of thirty-two miles in length, the estimated cost of which is about 220,000l., being at the rate of about 6,000l. per mile, calculated at present prices. This is in addition to ten miles of tramway at present laid down and open for traffic, the entire length of tramways within the borough, when the proposed works are completed, being thus forty-two miles. The undertaking was resolved upon at a special meeting of the Council, when, although there was a prolonged discussion on the subject, the members were almost unanimously in favour of the project, three members only voting against it. The new lines will stretch to the extreme north, south, and east boundaries of the borough. One of the principal lines is that along a fine broad thoroughfare at the south end of the borough, about a mile in length, and known as Prince's Park-road, leading to an ornamental park of that name, and likewise intersecting a district which now contains a large and constantly-increasing population. The locality is one in which there are numerous fine mansions, and where a large body of the Liverpool merchants reside. A memorial against the con-

struction of a tramway along this road, signed by a number of these merchants, was presented to the Council, in which it was stated that property would be much injured, but it was urged by the chairman of the tramways committee of the Council that, as the population in the locality interested by the proposed line was from 120,000 to 130,000, it was the duty of the Council to regard the matter as one of convenience for the masses, and not for the few, and he added that, instead of the memorialists having their property injured by the tramway, the probability was that it would be very much improved in value. He further explained that in Princess-road there was a boulevard, 21 ft. in width, which was intended to be laid with wood pavement, for the use of those who wished to drive in carriages. The other districts in which the proposed tramways are to be laid down are those of Everton, West Derby, and other localities in the north and east portions of the borough.

The lines are to be leased to a tramways company, who are to work the traffic, paying the Corporation 10 and 7½ per cent. on the outlay for the construction of the several lines. This company has a paid-up capital of 400,000*l.*, and is at present working the lines already laid down.

#### INTERNATIONAL HERALDRY EXHIBITION.

AN exhibition of a novel character will, it is announced, be held in Berlin next year. This is an International Exhibition of Heraldry. Considerable progress has, it is stated, already been made in preparation for this unique show. At the last meeting of the committee, under the presidency of Count von Stillefried, it was reported that the Prussian Government, through the Minister of Education and Worship, had agreed to grant the use of the extensive exhibition buildings in the Gantians Platz, Berlin, for the purpose of the exhibition. It was added that a large number of persons who had been questioned on the subject had welcomed the idea, and signified their intention of becoming exhibitors. At the next meeting, to take place before the end of the current month, the general programme will be drawn up, after which it will be printed and widely distributed. The Exhibition will contain not only ancient models and relics connected with the craft and mystery of heraldry, but will also comprise various classes of objects, furniture, glass-paintings, embroidery, tapestry, carvings, &c., which are ornamented artistically with real heraldic devices.

#### EXTENSION OF UNIVERSITY COLLEGE, LONDON.

CONTINUING our illustrations of the additions that have been made to University College, Gower-street, we give plans of some of the most important departments. The wings were an essential part of the architectural design, and their total absence caused the portion to appear too large for the building; but during the last fifteen years advance has been made north and south, and the considerable addition now made to the north wing secures the completion of Wilkins's original design. University College stands now with both its wings in the proportions planned by its first architect. Its fine portion is seen at last to full advantage in its proper setting, and the whole building is a worthy home for an institution that stands by its own strength, and is what it desires to be, a university for London, which carries to the highest attainable point the work of teaching, and looks to the sister institution, known as the University of London, which is solely an examining body, to test qualifications and to confer degrees.

During the half-century that has passed since University College was planned, the growth of many departments of knowledge has created demands for space that were not within the conception of the founders. The number, also, of the students has much exceeded expectation. Thus it has become absolutely necessary to extend Wilkins's plan. Each of the present wings, therefore, will finally spread for a little distance on either side by a T-shaped addition, fronting upon Gower-street. Space has also been obtained to an extent not easily realised until the rooms in the new buildings are seen, by change in the treatment of the roof. The

whole range of eleven rooms now to be occupied by the department of

#### Physiology

has been obtained in this way. It includes a lecture-theatre, providing accommodation for 170 students, which is, in all its arrangements, a model of what such a lecture-room should be; a large working-room, with separate working-places for 100 students; a workshop and laboratories for different forms of study and for original research,—all this being gained by what is in outside appearance a very slight departure from the original design.

The department of *Zoology and Comparative Anatomy* owes to re-adjustments of space, made possible by the addition to the north wing, a series of nine rooms, including lecture-theatre, large students' workroom, museums, and laboratories.

The department of *Chemistry* is now furnished with thirteen or fourteen rooms, including a spacious and lofty laboratory built at the back of the new wing as an annex, with an open court between. No fewer than nine rooms are set apart to different special operations.

#### Technical Chemistry,

also, is now provided with the space it needs. The chief lecture-room is an amphitheatre capable of containing 400 students. In the summer it is fitted up with tables for practical work at elementary analytical operations, and provides accommodation for 120 persons. Contiguous to it is a laboratory for preparing materials and lecture experiments, and also a museum for apparatus and chemical specimens. A smaller lecture-room is fitted up with tables suited for writing or for testing operations, and a small cupboard under each table serves to contain test-bottles, &c., which are put away when the tables are to be used by students in a lecture during which they perform no experiments themselves. There is in this lecture-room accommodation for eighty students. Adjoining is a library of chemical books for the use of students. The new analytical laboratory is a lofty hall (7½ ft. by 25 ft.) lighted from above. It contains working-desks sufficient for fifty students,—those at one end being fitted up for beginners, and those at the other end for more advanced students,—all of them exceedingly spacious and commodious. In the middle of the laboratory are various appliances for general use, such as,—(1) a table fitted up for treating substances with sulphuretted hydrogen. Each bottle through which the gas is being passed is surrounded by a glass cylinder, through which there is a powerful down-draught passing. The substance under treatment is conveniently accessible, yet none of the sulphuretted hydrogen can escape into the air of the laboratory. (2) Water-baths heated by steam from a boiler outside. Each evaporating-dish is heated by itself in a current of pure and warm air, whilst all the fumes which pass off from it are drawn directly into a flue without any probability of contaminating the contents of other dishes. (3) Water air-pump and Sprengel pump. (4) General re-agents and apparatus. (5) Reservoir of distilled water and tank of hot water.

For evaporating purposes there are a number of stalls of various sizes, so fitted up that an iron dish containing sand, or a porcelain basin, can be heated in each of them by gas, while all the fumes and vapour are drawn off by a powerful flue behind each stall. For apparatus of various forms and constructions there is a long and wide slate-table so arranged that any apparatus from which noxious fumes are liable to be evolved can be surrounded by a casing through which the air is rapidly drawn by a powerful flue. For fusions and calcinations there is a row of furnaces of various constructions mostly heated by gas and with a powerful draught. For the more special operations of the laboratory there are nine rooms, mostly in the adjoining basement.

#### The Engineering School.

The teaching of the science of engineering appears to have formed a part of the original scheme of the founders of the University College. As far back as 1840 the late Mr. Charles Vignoles was appointed Professor of Civil Engineering, a post which he held for some years. Until recently, however, it had not been attempted to do more than provide lectures on different branches of engineering, with instruction in mechanical drawing and in surveying. The present extension of the building has enabled

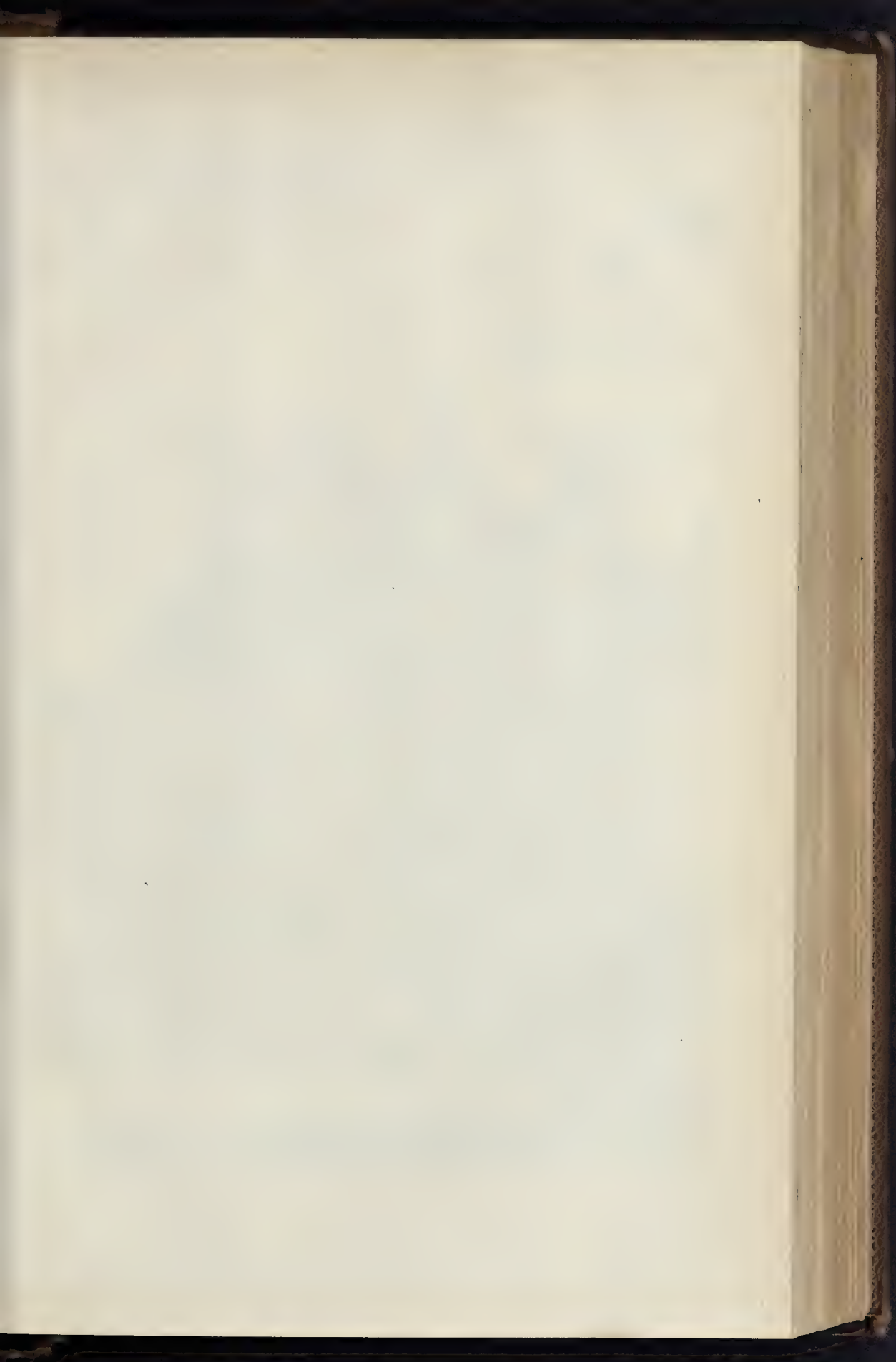
a very important change in this respect to be carried out by the establishment of a "laboratory" in connexion with the engineering school, an institution which differs in some important respects from anything which has hitherto existed in this country. In explaining the nature of this engineering laboratory, it may be stated, in the first place, that it is believed that no college education can supersede, for the young engineer, that practical training which he must necessarily obtain somewhere, and which can only be properly obtained on works or in the workshop or office. It is not therefore attempted to do anything which can render unnecessary a pupilage, or its equivalent, in the profession. But there are some matters of a more or less practical kind for obtaining a knowledge of which an ordinary pupilage seldom affords any opportunity, but which are of very great importance to the engineer in after-life, and which at the same time appear to fall entirely within the province of an institution like University College. These matters may be summarised in a few words as being the experimental methods which serve for determining the mechanical data employed in engineering calculations; and the main object of the engineering laboratory is to give systematic instruction in such experimental work.

The laboratory-work proper is intended for senior students. But there are many advantages in providing somewhat similar work for junior students, so far as it is possible to do so; and this is done in the workroom, which is fitted up under the same roof as the laboratory. The work here forms a preparation for the work in the laboratory, and at the same time it aids in many ways the class-work of the students, while it helps to develop their constructive mechanical skill. It is divided into three sections, the whole being under the general charge of the professor of engineering. One section, under the direction of Dr. Oliver J. Lodge, forms a junior practical course of physics. The students scheme out and construct simple physical apparatus, and are taught how to experiment by means of the apparatus they have made. The work of a second section, under the direction of Professor Henriot, is connected with the classes of applied mathematics, and in it are constructed models of surfaces and mathematical models in general, apparatus for the mechanical description of curves, and other similar instruments. In the third section, under the direction of Professor Kennedy, are made models of different mechanisms or machine details, models illustrating the distribution of stress in bridges and other structures, the arrangement of different types of valve-gear, &c. Simple experimental apparatus is also made, and mechanical experiments conducted by help of it.

The erection of the north wing of the College has set free a considerable space in the basement of the old building for the purposes of the engineering laboratory, which, with the workroom, now occupies a large room about 90 ft. long by 44 ft. wide, and additional space adjoining it. The laboratory contains a large testing-machine, capable of exerting a maximum pull of 100,000 pounds (or nearly 45 tons), and arranged so as to be capable of either stretching, compressing, or bending the specimen to be tested; specially-arranged appliances for making accurate measurement of extension, compression, deflection, &c., down to 1/1000 of an inch; machine-tools of various kinds; specially-designed apparatus for conducting experiments of the kind just mentioned, as well as the necessary tools and appliances for working in wood and metal, preparing apparatus and specimens, along with standard gauges and measuring apparatus; a small engine, &c.

It remains only to add that the scheme for an engineering laboratory which has been sketched out, and which was started last year at University College, and has this session been much enlarged and developed, has already received the very cordial approval of many of the most important and best-known engineers in the country. Much as has been done, all needs of space are not yet met, and as the work of the College is still growing, the Council has determined to persevere in the endeavour to complete the building as soon as possible in accordance with the revised design. The whole cost will be about 100,000*l.*, of which the buildings now finished take 35,000*l.*; of this 21,000*l.* have been already subscribed. The whole development of University College has been by voluntary work of friends of education. At no period of its history has it received one

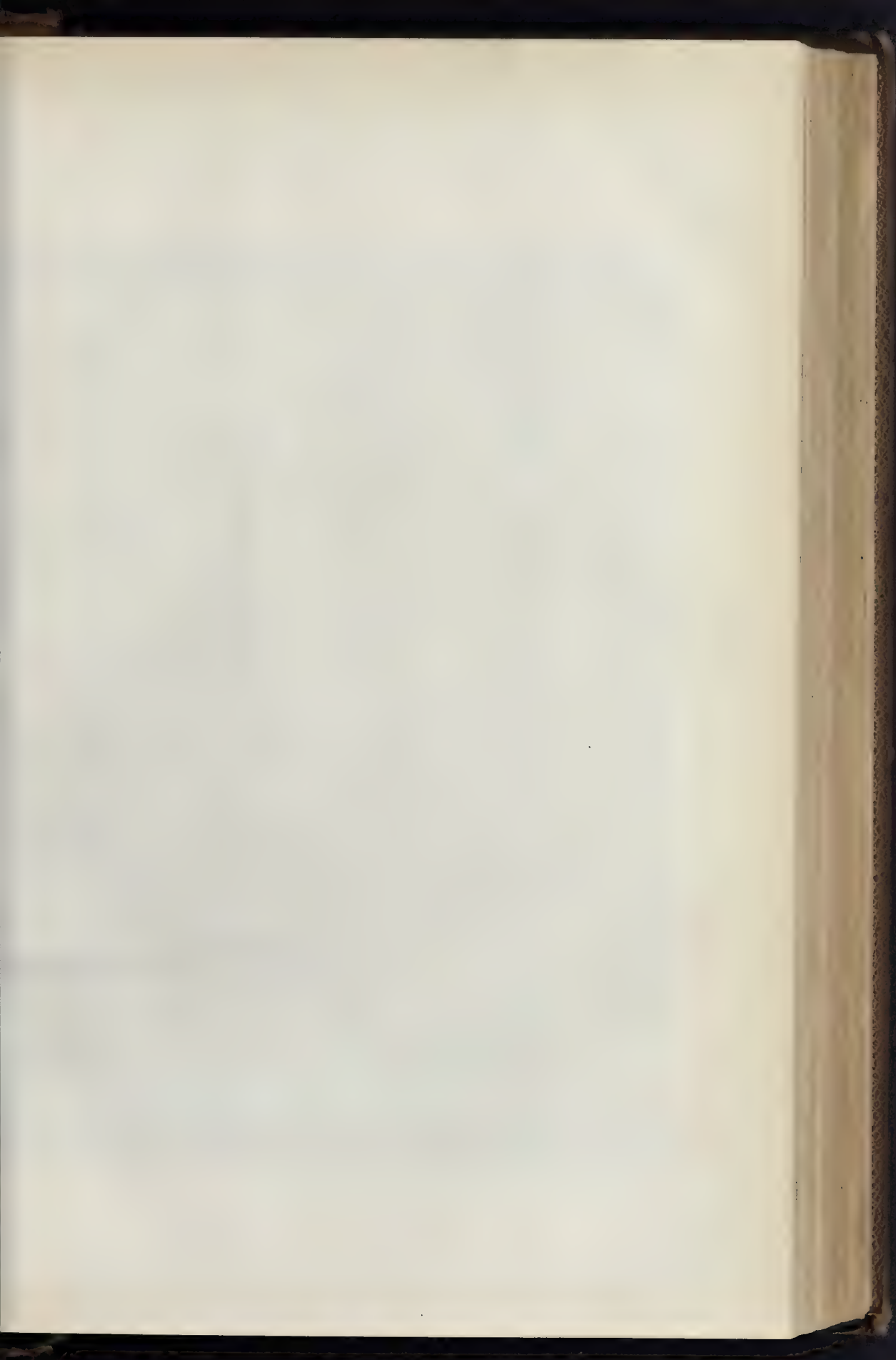




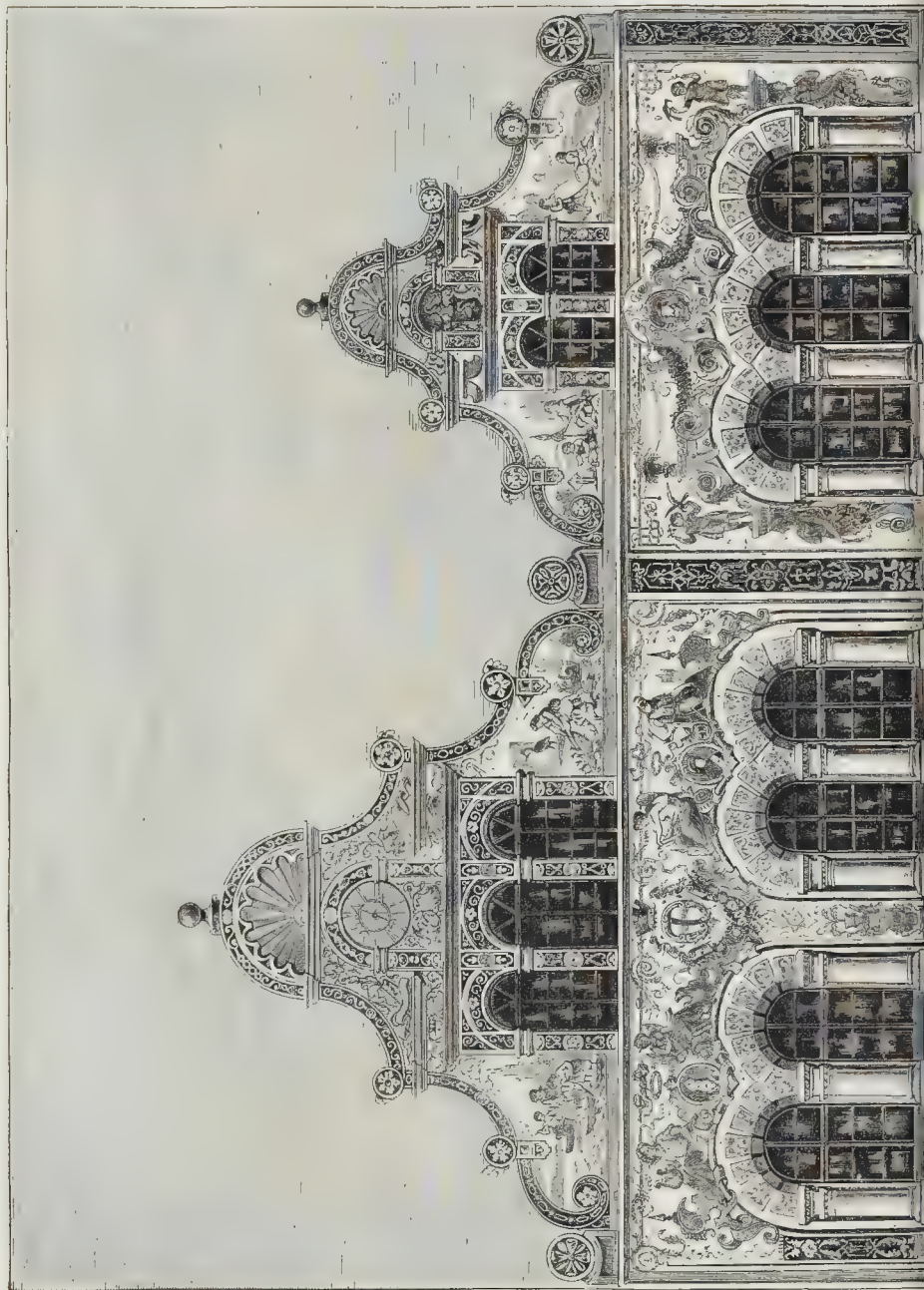


Wyman & Sons Engrs. N. York.

LONDON STREET ARCHITECTURE: No. 1, OLD BOND STREET.—MR. ALFRED WATERHOUSE, A.R.A., ARCHITECT.



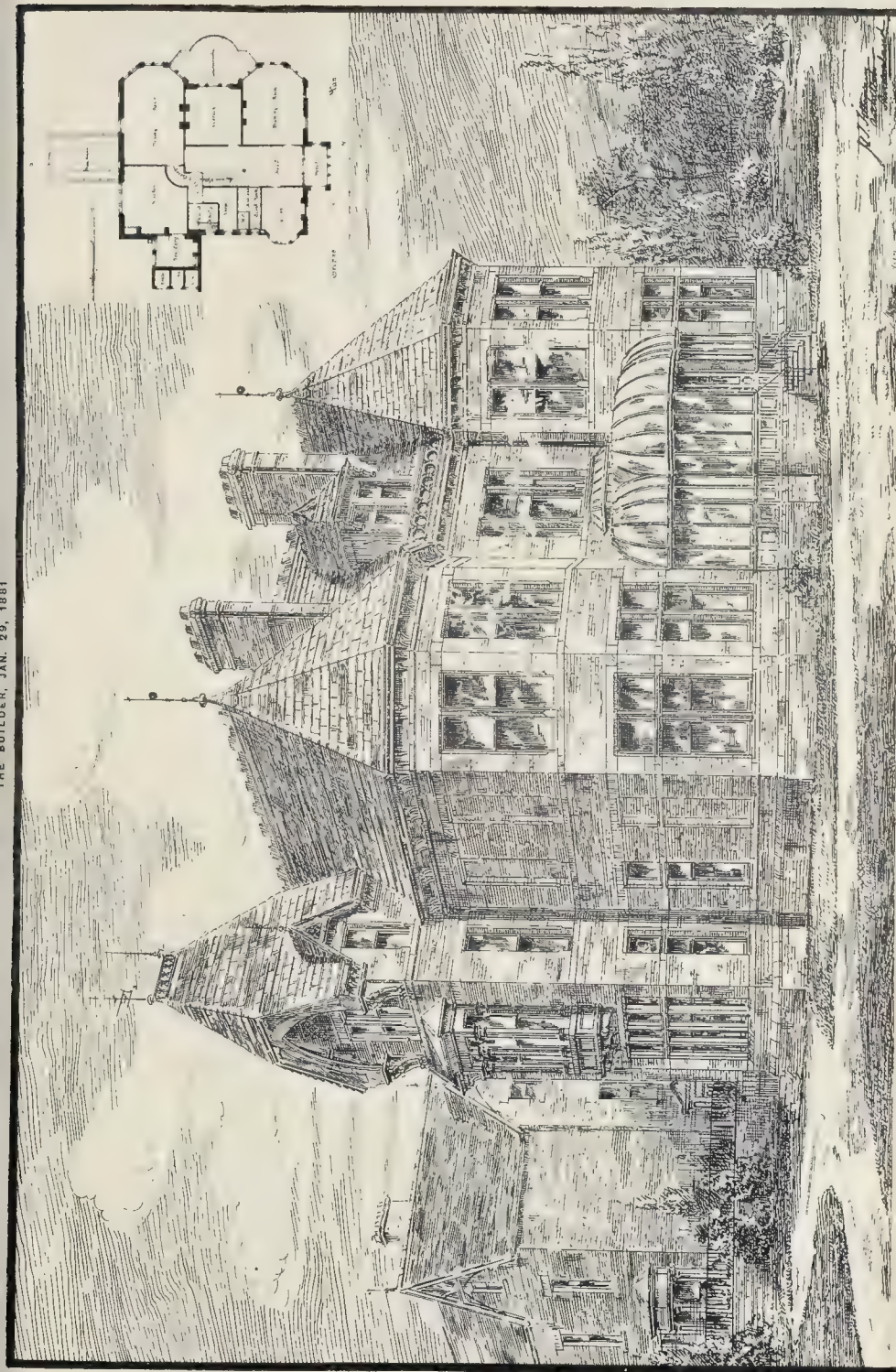
THE BUILDER, JAN. 29, 1881.





THE TOWN CHANCELLERY, KONSTANZ.—COMMENCED A.D. 1593.



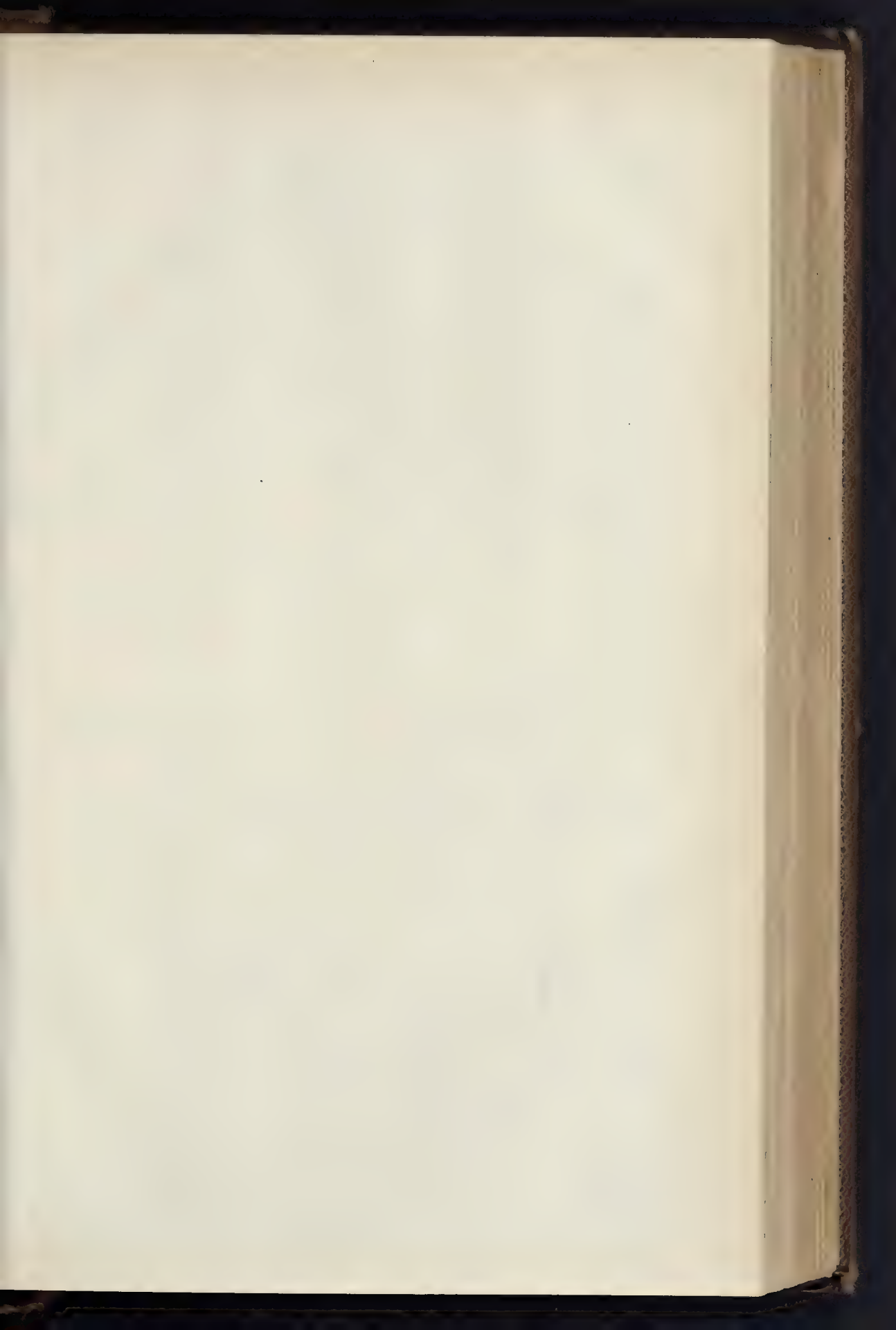


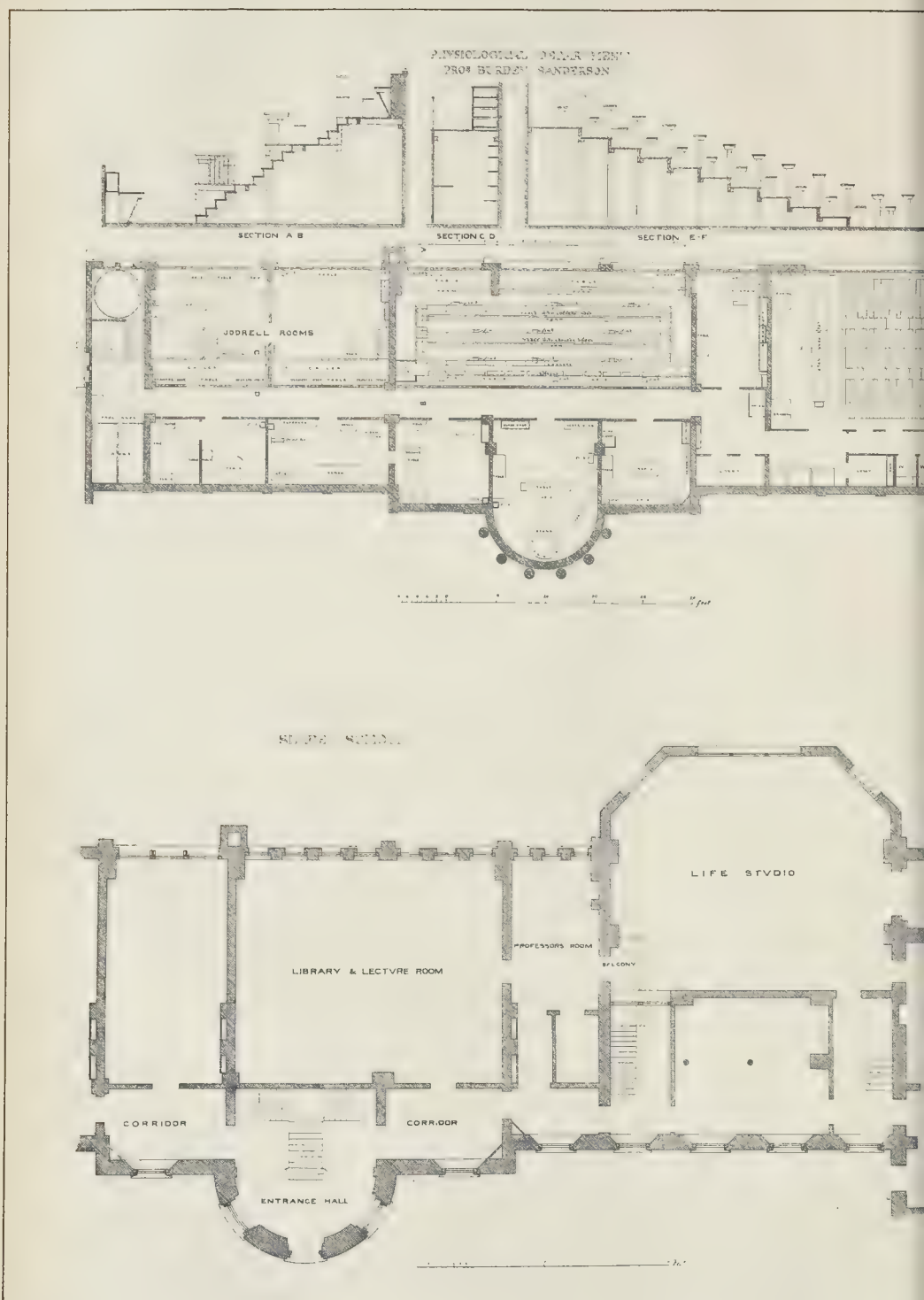
W. Leman & Co. Photo Litho 236 High Holborn

Wynne & Co. Printers 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Residence Thornhill Park. J. & T. Tillman, Architects.

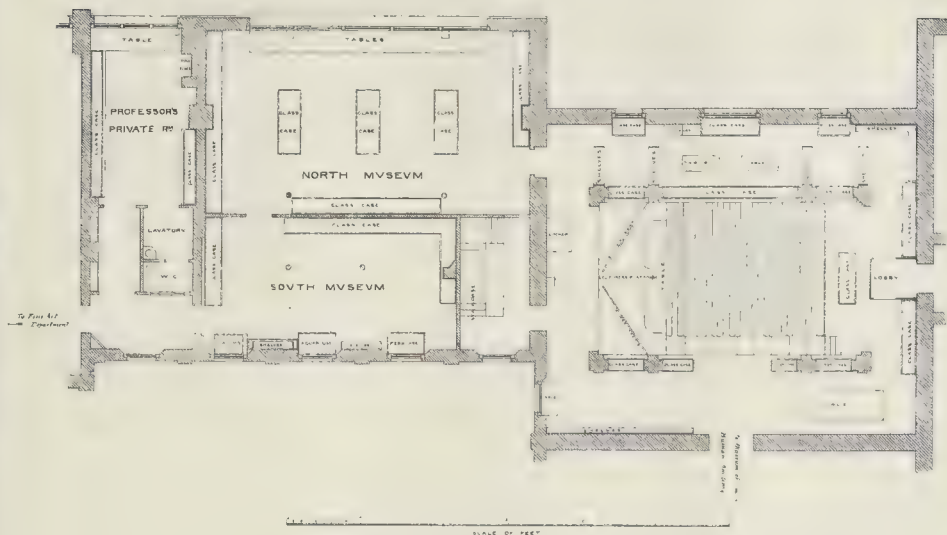




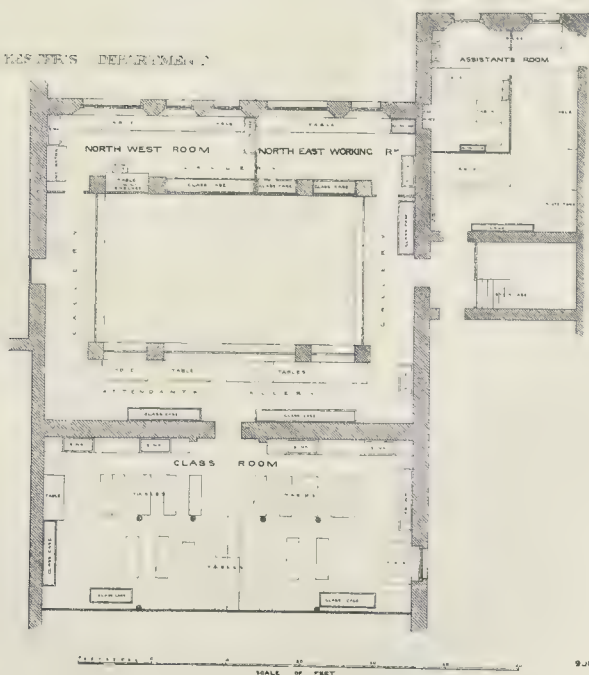


Whitman &amp; Bass Photo-Litho 236, High Holborn

PROF. LANKESTER'S DEPARTMENT.



PROF. LANKESTER'S DEPARTMENT.



MESSY PERRY & REED  
ARCHITECTS  
9 JOHN STREET ADELPHI.

Wyman & Sons Printers Gt. Queen St.



















# The Builder.

Vol. XL. No. 1893.

SATURDAY, FEBRUARY 5, 1891.

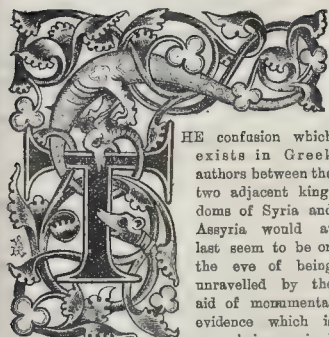
## ILLUSTRATIONS.

Specimen of French Bookbinding: Seventeenth Century.....	154
London Street Architecture: Nos. 7 and 8, Bloomsbury-square.—Mr. Chas. Foster Hayward, Architect.....	155
Manholes on Pipe Sewers, having Slope Gradients (Double-chase Engraving).....	158
"Healthy Homes," Grosvenor-road Estate, Stratford, E.—Mr. William Crisp, Architect.....	161
Chapel of Castle Trausnitz, Landshut, Bavaria.....	163

## CONTENTS.

A New Chapter in Art.....	145	Type Drawings for Main Sewerage.....	165	Mason's Marks: Society of Antiquaries.....	169
A Word or Two of Common Sense as to the Channel Tunnel.....	147	Healthy Homes.....	165	Tenders for Public Works for the Corporation of Lincoln.....	169
The Right or the Wrong of the Prohibition to Throw Snow into the Thames.....	147	House Drainage, Sewage, and Ventilation: Civil and Mechanical Engineers' Association.....	166	The Board-room for the School Board.....	169
Persian Architecture and Construction: Royal Institute of British Architects.....	148	The Standard Life Office, King William-street: Visit of the Architectural Association.....	167	Editor's Glass.....	169
Parmenter's.....	149	Leicester Architectural Society.....	168	Protection from Frost.....	169
Public Works at Athens in the Age of Pericles: Themistocles, Cleon, and Pericles as Builders.....	150	The National Association of Master Builders of Great Britain.....	169	A Course of Windy.....	169
The Lark Mr. B. J. Fabert.....	152	Monthly to Record the Site of the Exhibition of 1881.....	169	The Iron-work of Church Windows.....	170
Bookbinding, Ancient and Modern.....	153	St. Mark's, Venice.....	169	The Drainage Problem.....	170
London Street Architecture: Nos. 7 and 8, Bloomsbury-square.....	154	Sir John Soane's Museum.....	169	Quantities.....	170
Chapel of Castle Trausnitz, Landshut, Bavaria.....	155	State of Building Land.....	169	Bursting of Boilers.....	170
		Compagnies.....	169	The Frost and Boiler Explosions.....	170
		Quinary.....	169	Vertical Tube Ventilation.....	170
				Colour through Stained Glass.....	171
				Church-Building News.....	171
				Variations.....	171
				Miscellaneous.....	171

### "A New Chapter in Art."\*



THE confusion which exists in Greek authors between the two adjacent kingdoms of Syria and Assyria would at last seem to be on the eve of being unravelled by the aid of monumental evidence which is now being gained from explorations in the former land and which reveal its more ancient strata of civilisation. The story in the Odyssey that Memnon, the son of Tithonus and Eos, who came to the relief of the besieged Trojans, would seem to be but the last faint echo of tradition based on the former connexion between the remote East and the Troad. The ancient commentators support this theory of the far Eastern origin of Memnon, "the son of the morning" as he is called, and there does, indeed, seem to be some historic basis for the idea. By some, Memnon is said to have been sent by the King of Assyria to the aid of his vassal, Priam, king of Troy, while he is intimately connected with Susa, the capital of the kings of Elam. With the evidence which was accessible to the student but a few years ago, it was impossible to see in those traditions preserved to us only fiction, but recent discoveries would indeed seem to give some more real basis to them. The recovery of several sculptured and inscribed monuments from the Hittite or old Syrian stronghold of Carchemish, an important city on the Upper Euphrates, has restored to us an important station on the roadway which connected the cities of Mesopotamia and the shores of the Persian Gulf with the West. In our former notice on the discoveries† made on that site we pointed out how it was certain that there was a connexion between the shores of the Egean and the Hittite city—and thence with Nineveh—and Babylon. Situated as this ancient city of Carchemish was on the upper waters of the Euphrates, it occupied a most central position in regard to the nations around and formed a centre whence radiated the chief commercial and military roads of Western Asia, connected by caravan route with Egypt, Phœnicia, and the shores of Asia Minor washed by the Mediterranean, with the more northern provinces of Pontus and Galatia, and the wealth which was borne by these routes being again distributed south by the roads leading to Nineveh and the cities on the Tigris, or to Babylon, and the

shores of the Persian Gulf. It is, therefore, not in any degree surprising that the art-remains which are found at Carchemish exhibit a very mixed style, when we consider the various sources from which the local artist was able to draw his ideas. In the same way it is clear that the art and civilisation which was transmitted from this nucleus of Western Asiatic culture to the nations of the peninsula of Asia Minor would contain many traces of the mixed character of the teaching of the meeting-place of so many schools. The complex nature of some of the primitive remains found in various parts of Asia Minor, exhibiting traces of influence by more than one Oriental nation, has been a great problem to archaeology, but we now find in the remains discovered at Jerablus a connecting central link between the three great art schools of the ancient Oriental world.

In our former notice we showed how that the recovery of the interesting bas-relief of the nude Asiatic goddess from the ruins of the Hittite capital served to connect this sacred city of Atargatis or Derceto with the more western shrine of the Ephesian Artemis, whose worship reached such a grand and gorgeous state, under the Roman emperors, whose lavish gifts decorated the shrine of the great goddess. But the statue which now lies in one of the trunks at Jerablus has a far wider interest than merely its connexions with the worship of the Ephesian Artemis. It opens up a new study for archaeology in the growth and development of the art-representations connected with the worship of the Mother of the Gods; it has a history whose earlier chapters are to be found amid the mounds of Chaldean cities, as old as the early dynasties of Egypt, or in the debris of the second and third cities on the Acropolis of Ilios; and it is this cultus which forms the basis of all or the greater part of the primitive art of Asia Minor. The Babylonian Anat (or Anatis), Istar, Zisbanit, the Hittite Atargatis, the Phrygian Agdistis, and the Trojan Ati, have all part of this same story, and their representations at the hands of the various craftsmen of the land form so many chapters in the art-development of Western Asia.

The finding of the statue of the Hittite mother-goddess among the remains of the palaces of the rulers of Carchemish and in conjunction with several other sculptured remains, enables us to form some idea of the date at which they were carved. The history of the Hittite confederation may be divided into three periods,—the early period, when the tribes were coming down from their northern home, and had come but little in contact with other nations, and were but slightly influenced by the civilisations of surrounding people; the second period was that when Egyptian influence was being felt, and contact with Egypt was consummated by the intermarriage of the royal houses of Kheta-sira and Ramesses II.; the third period is that when they were in contact with the great Assyrian empire (B.C. 1200—700). The remains at Carchemish present us with a type of art which comes

under the last of these subdivisions; but there are other remains now known to belong to this hitherto lost nation which enable us to see the characteristics of the two earlier periods.\*

One of the most interesting statues recovered from the excavations at Jerablus is one representing a curious group of beings,—a Hittite deity and his attendant priest standing on the back of a couchant lion. The deity is represented, like the goddess before described, as winged, and he wears on his head the lofty conical head-dress with horned brim, surmounted by the crescent. The priest who stands behind has a curious conical cap, but not horned, and carries a battle-axe. The lion upon which these two curious creatures are represented as standing occupies all the lower portion of the sculpture, and is in excellent preservation. The lion is lying full length upon the base of the slab, with the head upon the fore paws, which are extended outwards, the tail being curled under the body. It has, in grouping, a resemblance to the figures of the couchant lion in the sculptures of Asurnazirpal (B.C. 885) in the British Museum, but is more archaic in style and evidently earlier. The attitude of the lion is peculiar, and certainly typical of the style of art in vogue in Asia minor, as it is found in several places. The facial type of the figures here represented is peculiar, their long heads and features seeming to distinguish them most certainly from the Semites of Syria or Assyria, while the turned-up shoes indicate a mountain origin. It is extremely interesting to find that, after centuries of exposure to the air, there has been preserved to us an almost duplicate sculpture to this bas-relief from Carchemish, at Boghaz-Koi, near the Halys, the site of the great temple of the Phrygian Agdistis in Galatia. The sculptures here were first brought to notice by that able explorer, Hamilton, who visited the spot and described them and the adjacent ruins at Eyuk, which are also of great interest to prehistoric archaeology. The spot was afterwards visited by Texier, and by Perrot and Gaillanne, and more recently by Van Lennep, and all of these travellers have given more or less accurate drawings and photographs of the remains. The series of sculptures here consist of a number of bas-reliefs cut on the sides of a rocky glen, and the spot bears the Turkish name of Yazli Kaya, "the carved rocks." The area enclosed in this recess is very irregular in shape, and would quite preclude the idea of its being the remains of any rock-cut temple, as the sides are formed not of the regular walls of a cleft, but simply by the accidental arrangement of a number of large limestone boulders of various heights, sizes, and shapes which have been utilised by the sculptors to carve the strange scenes. The faces have been roughly prepared for the cutting of the sculptures, but the whole appearance of this glen is that of some rude temple of a nature goddess wild and suitable to the orgies connected with

\* The monuments at Jerablus exhibit no traces of forms found in the art of the late Assyrian empire (B.C. 721—625), but resemble that of early middle (B.C. 900 to 800).

\* See vol. xxxix., p. 402.

† Ibid.



polis of Hissarlik, is the lead idol found at a depth of 22 ft. below the surface in the ruins of the third or burnt city. Here we have a representation \* which bears so close a resemblance to the Hittite figure at Carhemish, that one wonders if any connexion could have existed between the city on the banks of the Euphrates and the "golden city." Here we have the nude figure of the goddess, as at Carhemish, with hands clasping the breasts, the long pendent locks, and all the characteristics of the "mother goddess." The conical head-dress with its lunar emblem is not found, but it appears shortly after in the later development of the representation. An examination of the figures and pottery unearthed by Dr. Schliemann cannot but convince us that there is a symbolic connexion between the idols and the ord or human-headed vases. In the vases, the conical cover often surmounted by a horn, as in Nos. 227, 234, 236, would certainly seem to represent the head-dress of the Hittite goddess, while the projections or appendages, such as are so prominent in the vases of the third city, as in No. 349, would seem to be derived from the wings.

From the remains which have now been recovered from the sites which we have noticed in this *resumé* of some of the most recent discoveries, one point is clear,—that at a period earlier than has hitherto been supposed by archaeologists, the western parts of Asia Minor were brought in commercial, and later in military, contact with the people of North Syria, and from them obtained certain art conceptions and forms which they developed in after-time. It is also clear that this contact was not solely due to the Phœnicians, as has so long been supposed, but that the caravans which passed from Carhemish, on the Euphrates, threaded their way through Central Asia Minor, and bore the learning and wisdom of the Chaldees to the shores of the *Ægean*. A lasting record of these early pioneers of civilisation is preserved in the rock-cut statue and inscription in the glen of Karabel, near Smyrna, and in them we recognise the lost nation of the Hittites. It is to be hoped that the small number of monuments which are now known to us, and which form, as it were, many disconnected paragraphs, may be largely augmented until the time will come when this New Chapter in Art will read as one continuous whole.

#### A WORD OR TWO OF COMMON SENSE AS TO THE CHANNEL TUNNEL PROJECT.

The proposal for the tunnel under the Channel is again coming to the fore, and the chairman of the South Eastern Railway speaks of it with no little confidence. As to the difficulties of construction, of drainage, of ventilation, and of working, if finished, we have nothing now to say. Let us suppose that the advisers of the project have duly weighed these enormous physical difficulties, and see their way to overcome them. It is true that they are, each and all, of unprecedented magnitude. So far from our past experience furnishing any guide to their removal, we rather fear that the greater the experience of the engineer, the less sanguine will be as to an ultimate triumph. But for the present we are content to approach the question as learners, and as such we should be thankful for a little information on the very prosaic subject of finance.

The South Eastern Railway, in the year 1879, had a gross revenue of 5,560l. per mile, the capital outlay having then amounted to 62,758l. per mile. Of the revenue, 70.48 per cent. was derived from passengers, parcels, and mails. How much of this was through, and how much was local, traffic there exist no means for ascertaining,—none at least accessible to the public. Working expenditure was 46.48 per cent., and net receipts from traffic were 4.56 per cent. on capital. As is unfortunately the case with English lines in general, no provision is made for *amortissement*, or sinking fund, or for in any way replacing the capital laid out in costly and perishable works or plant.

The estimate which some time since was offered for the tunnel under the Channel was 7,400,000l., or more than a third of the 21,000,000l. which the line in question has, in round figures, cost. We have not by us information as to the exact length of tunnel which the estimate was supposed to cover. But perhaps

the best way is to look at the matter per mile, as in that case a little more or less length is comparatively unimportant. And we have some information as to the cost of long and important tunnels, on which experience indeed any rational estimate of their cost can alone be based.

The Metropolitan and Metropolitan District Railways, taken together, make up about the length of twenty-three miles, which is somewhere about that of the line under the Channel. They cost together upwards of 15,000,000l., the cost of the former being 640,000l. per mile, and that of the latter 680,000l. per mile. We have no other works of like magnitude to compare. But we have numerous cases of tunnels. That which naturally first suggests itself for comparison with a submarine tunnel, is the tunnel under the Thames. This work cost 1,293l. per yard run, taking the width of the river at 350 yards. If we calculate the cost out and out, from shaft to shaft, 400 yards apart, the price was 1,137l. per yard. This is at the rate of a little over two millions per mile. The Kilby Tunnel, on the London and North-Western Railway, which, though not a submarine was still a wet tunnel, cost 145l. per yard. The St. Gotthard Tunnel has been priced at a little less than this, but we have not the final accounts. The Mont Cenis Tunnel cost 195l. per yard. These precedents of expense would hardly justify an engineer in estimating a tunnel under the Channel at less than 200l. per yard, or 352,000l. per mile, being less than half the cost of the Metropolitan lines; of the price of which, however, we must remember that the cost of land formed an important, though undistinguished, portion.

To pay five per cent. on 350,000l. per mile requires a traffic of about 35,000l. per mile per annum, or more than five times that of the South-Eastern Railway. No English railway approaches the quarter of this figure, with the exception of the two metropolitan lines, which take respectively 38,000l. and 34,300l. per mile. These, it is well known, are entirely exceptional cases, fed by constant local urban traffic, with stations little more than half a mile apart. The through traffic of these lines, from Mansion House to Aldgate, is almost nil, and even from the angle of the loop to either terminus the through traffic is probably less than the intermediate local traffic. In the Channel tunnel there can be no local traffic. Generally speaking, it will be only the through passengers from London to Paris, and *vice versa*, who could be depended on to feed the line. How many there are, the Company can no doubt tell; and it would be very desirable, if the shareholders are expected to promote the tunnel, that the information should be given. All that we can state positively is, that the whole of the receipts of the Company for rents, tolls, navigation, and miscellaneous earnings amount only to 173,200l. per year. If we suppose that 150,000l. of this is derived from fares of 10s. each for passengers crossing the Channel, we arrive at the number of 300,000 per annum, or about 820 a day. At our maximum charge of 3d. per mile, these passengers would pay 3,750l. per mile per annum, or about ten per cent. of the required revenue! And as to this, it must be remembered that the 10,000 passengers per mile per diem of the Metropolitan District line fall considerably short of affording such a revenue. Notwithstanding that, double the amount to allow for merchandise, and allow fifty per cent. for working expenses, and we get, on an exaggerated estimate, a chance of about one per cent. on the lowest estimate conceivable for the undertaking.

These are not, we allow, exact figures. But they are the nearest at which we can arrive, and the error, we take it, must be in excess as to traffic. It is in the power of the promoters of the plan to tell what is the annual traffic across the Channel,—what is the number of passengers,—and what are to be the proposed fares. If these exact data are given, the public may be allowed to form their own conclusions as to the probable increase that would be made if people could be conveyed for twenty or thirty miles beneath the ocean. They would also form their own opinion as to whether it would be safer to take the 337,000l. per mile of the Mont Cenis tunnel, the 660,000l. per mile of the Metropolitan Railway tunnel, or the 2,000,000l. per mile of the Thames tunnel, as their guide as to the probable cost of the Channel tunnel. When these matters are satisfactorily made out, it will be time enough to go into the engineering questions of construction, maintenance, working, drainage, and ventilation. Taking all these

things in the most favourable light, we have to consider whether a traffic equal to that of the Metropolitan district line is rationally to be expected, under any circumstances, to arise between Dover and Calais.

#### THE RIGHT OR THE WRONG OF THE PROHIBITION TO THROW SNOW INTO THE THAMES.

We should very much like to know whether the Conservators of the Thames are within their rights in preventing the relief of the roadways of London by throwing snow into the Thames. On the first blush of the case, it strikes us that such can not be the fact. If half an inch of rain falls over London, it makes its way into the river. If the fall take the shape of 6 in. of snow, what right have the guardians of the river to prevent it from following the same natural course? Let the thermometer rise, as it did on the 26th of January, and the matter settles itself. Let it remain below the freezing point, and what justice is there in preventing the citizens from resorting to the river, in their sore need, to perform a legitimate function?

Turning, however, to the Thames Conservancy Act of 1857, we find that Clause 102 provides that "Every person who shall unload, put, or throw into any part of the River Thames, or on any shore or ground below the high-water mark of the River Thames, any rubbish, earth, ashes, dirt, mud, soil, or other matter, or allow any offensive matter to flow into the Thames, shall forfeit for every such offence any sum not exceeding 20l." We confess that the words "or other matter," seem legally to include snow. We feel sure that such could not have been the intention of the Legislature; but we suppose that such may be held to be the effect of the legislation. Attention, however, should be given to clause 179 of the Act, which states that nothing contained therein shall take away, alter, or abridge any right or claim to which any owner or occupier of land on the bank of the river is by law entitled. We do not see how, in face of this clause, any owner or occupier of riparian property could be prevented from throwing snow off his own premises into the river. Still, if such be the case as to power, there yet remains the question of the wisdom of the enforcement of so vexatious, and, we take it, novel a prohibition, under all the inconveniences which are thus indicated on London. We quite fail to see that the interest of the navigation, or of the real conservation of the river, authorise such an interpretation of "other matter." But the case assumes an aspect that, but for its inconvenience, would be simply ludicrous, when we see how the meshes of the law are so constructed as to catch the minnow, but let the pike swim through. Is it not too absurd to see the Conservators take their stand on a lucky surplusage of terms in an Act of Parliament, to prevent the proper freeing of the thoroughfares of London from snow, while at the same time they have so mismanaged as to allow the whole "offensive matter" of the sewers of London "to flow into the Thames" without stint or disguise? If this is not to strain at a gnat and swallow a camel we do not know what is. If the Conservators had been advised as other river guardians have been, we think there is little doubt that the sanitary safety of London would have been provided for in a very different manner from that which is now the case. They chose to attempt a proof of obstructions which, it seems, did not exist, instead of that of pollution, which do. They naturally failed. It is too bad that, having from wrong tactics failed to perform that function of defence of the river for which they were originally constituted, they should turn round to exact the pond of fish from the Metropolitan Board for throwing into the Thames, in the form of snow, that which, in twenty-four or forty-eight hours more, proceeds to throw itself in the form of water. Mean time trade suffers, health suffers, and a sense of anger and injustice is aroused in the minds of a large portion of the inhabitants of London.

**South London Working Men's College.**—On Monday next, the 14th, Miss Hart will lecture on "Leclair, of Paris, House Decorator," showing he has solved the problem of the relations of capital and labour, by making all his workmen participants in the profits of the business, which is a very large one.

\* *Ilios*, p. 337, No. 226.



Moguls, he quite differed from Professor Lewis when he considered them only as the destroyers of buildings in Persia, for Samarand was built by Tamerlane, and the Moguls also had the merit of introducing colour decoration into the country, as was to be seen in the mosques at Tabreez and other places. Indeed, the Moguls were a most artistic race, like all the Turanians. The Palace of Mashita, which had been mentioned, was certainly built by Byzantine architects, the base being of a Corinthian type. It was undoubtedly the case that while the Saracens in Spain mixed their style with a certain amount of Christian art, in Persia they incorporated with it a certain admixture of Mogul art. The Palace at Mashita had been cited in the paper as affording an instance, well worked out, of a dome with pendentives, and Professor Lewis had dwelt a great deal on the invention of the pendentive dome, as though it had been invented in Persia. He (Mr. Ferguson) could not say that it might not be so; there was no sufficient evidence to prove either way; but his impression was that the weight of evidence was in favour of the development of the pendentive dome from the Pantheon at Rome through numerous buildings to St. Sophia at Constantinople. He did not think that there was any proof that the Byzantines got any hints on the subject from the East; indeed, it was much more likely that the Eastern architects got their ideas from Byzantium. With regard to the stalactite vaulting, Mr. Bonomi, during the construction of the Alhambra Court at the Crystal Palace, had explained how it was made. It was very beautiful, but not very grand or dignified. There were fifty other points mooted in the paper which he should have liked to touch upon, had time permitted. The most interesting part of the paper was that which related to modern Persian houses. The whole subject was one worthy of further discussion.

Mr. J. D. Orace called attention to a photograph exhibited of a modern Persian house at Bagdad, occupied by the English Consul-General ten or twelve years ago, and said he desired to add his humble confirmation of Mr. Ferguson's view that it was hopeless to attempt to trace the direct sequence between ancient Persian art and the Saracenic which exists. He thought that the remains at Mashita in Moab formed an interesting link in the history of Eastern art, and he might mention that the Committee of the Palestine Exploration Fund were about to explore that side of Palestine which was east of the Jordan systematically. That part of the East was known to be covered to a much greater extent than Western Palestine with ancient remains, and he thought the projected exploration was likely to lead to valuable results.

Mr. William Simpson (of the *Illustrated London News*) said he had been much interested in the paper, though he had never been in Persia. The influence of Byzantine art was, he thought, plainly apparent in the sculpture found in the Jellalabad Valley, and that Byzantine influence may have travelled along the shores of the Mediterranean and through Persia.

With regard to the perforated plaster panels or windows, the use of which had been stated to be the exclusion of the direct rays of the sun, they were much used in India, and he thought their principal use was rather to keep out animals while admitting air. With regard to pendentive domes, he believed that the finest specimen in India was that of an old mosque in Delhi called Kila Kona, or the old fort. He considered that mosque to be the finest in India, if not in the world, though it was not so tawdry as the Taj Mahal. The dome particularly was a beautiful specimen of work. It was not a bulbous dome, for bulbous domes only occurred in the later mosques.

Mr. Phené Spiers said his travels in the East had not extended so far as Persia, but he confessed that he was somewhat surprised to be told (as he understood the paper) that to Persia we owed not only decoration, but construction. He did not think the paper contained proofs of such an assertion. He thought the general impression of those who visited countries where Saracenic architecture was found was, that a great deal of influence was due to Persia in the matter of the decorative work. Our historical knowledge of the subject was entirely due to Mr. Ferguson, who had sufficiently proved that the origin of the pendentive, as seen in St. Sophia's, Constantinople, could be traced, exemplified by example, from the Pantheon and other buildings at Rome and Ravenna. Moreover, the Count de Vogüé had shown in his book that

in Central Syria were worked out and developed, in the third and fourth centuries, some of those problems which we saw in their later development in St. Sophia's.

Mr. George Atchison said he quite agreed with Mr. Ferguson that it was a very great pity that so very large a span of history had been embraced by this paper. He had hoped that Professor Lewis would not have gone into remote periods of Persian history, but would have confined himself to the interesting materials which Mr. Clarke had collected. He should have thought that if the Moguls did introduce any colour into the world it was blood. If ever there was a racial it was Timour or Tamerlane, who, when he took any large town, slaughtered men, women, and children, preserving only the lives of artists likely to be useful to him. The subject treated of in the paper was one of peculiar interest, for Mr. Purdon Clarke, during his residence in Persia, was able to procure the trade pattern-books of the masons and building artisans of Persia. The stalactite vaulting, which had been, if not the admiration, at any rate the astonishment, of the world, appeared to have been reduced to such a system that the workmen were able to execute it with the greatest facility and accuracy, affording an instance of tradition in art which no doubt existed in the Gothic period. He believed that some of this vaulting was executed in Paris in 1878, by Persian workmen in the building erected by order of the Shah at the Exposition.

Mr. Wild (of Sir John Soane's Museum) said he thought that M. de Vogüé's book on Central Syria showed clearly the transition from the Byzantine to the Saracenic or Arabic style.

With regard to the construction of the stalactite vaulting, he should be pleased to explain it in detail on some future occasion.

The Chairman, in closing the discussion said he was in hope that there would have been a fuller discussion on the subject, but Persia was still very much a *terra incognita*, and he agreed that it would have been better had the paper covered only a portion of the subject, leaving other portions to be dealt with in subsequent papers. He was very pleased to hear from Mr. Orace that the Committee of the Palestine Exploration Fund had determined to explore some of those singularly-interesting sites in Eastern Palestine which were upon the confines of Persia, for, from personal acquaintance, though but a cursory one, with some of those sites, he was convinced that some interesting discoveries would be made. That part of the world had been closed to investigation for so many centuries, that the work which the Palestine Exploration Fund proposed to do there was likely to prove a very great and important contribution to archaeological science.

The next meeting of the Institute will be held on the 14th inst., when the discussion on Mr. Robins's paper on sanitation in architecture will be resumed.

#### PARSONAGES.\*

In a large proportion of the old Sussex livings is to be found either standing alone or built into and incorporated with the house, a timber-built cottage, with solid oak beams, a great central chimney-stack, lead-light casements, brick nogged or plastered panels, sometimes weather-tiled on the upper part, two stories in height at the front and one end, with a high-pitched roof running down to within a foot or two of the ground at the back and other end. The plan consists simply of three or four rooms on each floor leading out from one another. The lowness of the stories and the insufficient height of the doors render it necessary for a modern man to take heed to his ways as he walks about therein. Such were the humble abodes of the mass of the country clergy two hundred years ago or less. Since that time parsonages have passed through every form taken by other houses. It was discovered that the old timbers exceeded the necessary scantling in size: so fir was introduced of dimensions terribly attenuated. Slates were a great invention, and might be put at so much lower pitch than tiles, so on they went at an angle of thirty degrees or less, but the south-west wind drives the water right through. Then came the Gothic revival, when every room was gabled, and an accumulation of gutters and snow stores created marvellous to behold, and

terrible to keep clear and in repair; while to suffer patiently all the evils arising from casements and small lights may almost be regarded as the special form of martyrdom, not so severe perhaps, but far more lasting than that now in vogue, by which the parsonage-building clergy of the day proved their orthodoxy. Common sense, double-hung sashes, and to some extent Queen Anne (not in this case the beautiful lady of Dean's-yard) have advanced us some stages farther, while the old weather-tiled timber-houses have asserted a very considerable artistic influence in all those parts of the country where brick and tile rather than stone and slate are the natural building materials.

Never before, I imagine, were architects so free from the tyranny of style and pre-judice, and so able to satisfy, in accordance with the dictates of common sense, any definite requirements such as those issued by the Ecclesiastical Commissioners, to which I have now to call your attention in detail. It is, of course, quite possible you may not have to get the consent of the Commissioners to your drawings; but you will hardly neglect the particulars issued by them, even if it be only to coerce a possibly self-willed client into the right way. Mr. Christian told me, and has allowed me to repeat here to-night, that he is always ready to look over when in pencil any drawings which are to be submitted to him. This is a privilege I advise all young men to avail themselves of. The mention of young men reminds me that in this Association I am entitled to consider myself as speaking to our younger members, and if any who are older have done me the honour of being present to-night, they must excuse me if I appear to them but an utterer of platitudes. But to return to Mr. Christian. Show the points of the compass on your plan, and look after your aspects; for, until you have satisfied him that you have obtained all the sunshine and cheerfulness that the site is capable of affording, you will have a bad time of it. The Commissioners suggest the provision of two sitting-rooms, with the somewhat modest dimensions of 16 ft. by 14 ft. It is certainly desirable that one room, at least, should exceed these dimensions, and I am inclined to give preference to the dining-room, as being that best adapted for those meetings of parishioners or of neighbouring clergy which constantly occur in parsonages. The dining-room is, as, in fact, the Commissioners call it,—a "sitting-room," in some cases the family sitting-room. It must be cheerful, with south-east or southern aspect, and as unlike as possible to the state dining-room looking north of a gentleman's mansion. The drawing-room, or ladies' room, has no special features in a parsonage. A bay will almost certainly be asked for, as some picturesqueness of plan is now much appreciated. It is well to provide a side wall where a conservatory may be placed, with a French casement opening in that direction. The study is a room of considerable importance. It should be free from the disturbing influences of the household; for instance, its fire-place should not be back to back with that of the kitchen; the constant raking of the kitchen fire constituting, I have been told, a considerable nuisance. It should be easily accessible for callers, though the kind of parish largely affects the mode in which this is to be provided for. In purely agricultural parishes, with the exception of the squire and a farmer or two, the people will all go to the back door and feel themselves much more happy to be shown in that way or to be seen there. In more populous places the front door will be more used, and a study accessible without passing much into the house is desirable, while in towns a special study entrance or exit is sometimes provided. A cheerful morning sun is desirable; the hot sun of an afternoon is conducive to sleep rather than to study. Above all, whether the parish is large and the incumbent an active business man, or whether he be of those who have comparatively light professional duties and on whom, consequently, rests the responsibility of maintaining that high standard of learning, theological and polite, which in these days of so manyalogies it is difficult for business men to attain to, the study should be sacred. There papers should rest undisturbed, books should remain open at the page last scanned, and even dust should be treated with some respect. Such a room need not be large, and a small room offers less temptation for domestic incursions. I think the 14 ft. by 12 ft. given by the Commissioners is very ample. Of the kitchen and scullery I do not know that it is necessary to

\* A paper by Mr. Lucy W. Ridge, Surveyor of Ecclesiastical Dilapidations in the Diocese of Winchester, read before the Architectural Association on the 21st ult. See p. 120, ante.

speak very particularly. To the five bed-rooms, each with a fire-place, I would certainly add, at least, one dressing-room, with a fire-place if it may be, and large enough to hold a bed. Where only one dressing-room is provided, it is not a bad arrangement to make it applicable to either of two rooms, so that if guests come who expect that accommodation it may be given over to them. It will be well to have definitely in mind which rooms you intend specially for the servants, and in some cases the adaptability of certain rooms for day and night nurseries will be discussed and provided for. I need scarcely say that five bedrooms are generally regarded by the clergy as a very small amount of accommodation. The Commissioners go on to ask for a pantry or china-closet, larder, water-closet, wine and beer cellar, coal-house, dustbin, &c. There should, if possible, certainly be a pantry rather than, or in addition to, a china-closet. Where there is a glebe meadow, so that cows are kept, a dairy is necessary, even in the smallest house. It should be near the back door. In remote places this is more important. One rector told me that unless he kept ows the cottagers could not get milk. Of water or earth closets I find there are generally required. One for the first floor or first landing; one for gentlemen's use, either external or on the ground-floor; and one in connexion with the servants' offices. As a rule the last two I provide as earth-closets wherever there is a garden. The provision of a cellar is much appreciated as serving as an additional store, it being remembered that tradesmen do not call daily for orders in the country, and that co-operative stores are a long way off. It is also useful as a summer larder; and may be used as a dairy. When there is a cellar a wine-cellar can easily be provided. In other cases a place must be found elsewhere. Mr. Christian suggests under the stairs, where some ingenious bins can be made. At the present day the wine-cellar in a parsonage is rapidly becoming a matter of comparatively small moment. Do not excavate a cellar in a damp soil, as a wet cellar is very dangerous to the health of a household. For the coal-place, cleaning-room, servants' E.C., I have found it a good plan to provide a separate door out of the scullery, with a little covered lobby or yard, so that the servants go to these offices by a private way without coming in contact with the numerous callers who come to the back-door of a country parsonage. In one plan I have, in fact, abolished the old scullery back-door and substituted a door calculated, I think, to be of very general use for tradesmen, servants, and parochial callers, as well as being a back-garden door. Where the front door opens into a portion of the garden, and there are casements in the drawing-room, I hardly consider a special garden-entrance necessary. It makes an additional external opening to bolt and bar, and is liable, unless very well managed, to be productive of through-draughts, with the consequent slamming of doors. One thing not mentioned by the Commissioners, which is almost essential, is a back staircase, or, at least, part of one. Where all the sitting-rooms are on the ground-floor it is sufficient to provide a back staircase to the level of the first landing only. To have a back staircase leading from the ground-floor to the attic and principal stairs to the first floor only, is, of course, the more luxurious arrangement, and is suited to houses somewhat beyond the Commissioners' minimum. An additional room very much valued is a parish room. This does not mean a small public hall such as that attached to the church of Whitechapel, or those which some London clergymen have provided, but a rough room suitable for night schools, choir-practices, and similar meetings to which the people will come in their working clothes, a place where mothers' meetings may be held, the parish lending library kept, soup distributed, blankets served out, and the hundred and one other things done of which a country parsonage is the centre. It serves for a waiting-room and for interviews with callers, especially those of the rougher classes. It should be easily accessible from the parish or back-door, rather than from the front door. In proportion as the village and parish gets smaller, the number of works of which the parsonage is the centre becomes greater. The clergyman and his family unite in themselves the offices performed in towns and larger places, by the district visitors, guilds, and other organisations, and the parsonage becomes the soup-kitchen, the penny-bank, and even the dispensary. With regard to many things which, with the greater facilities and

higher wages of towns, the poor can well do for themselves, they have in the country to rely on the help of the parson, or other benevolent inhabitants. There are many nights when it is easy enough to go to a well-lighted school-room in a town, when to attempt a meeting in a badly-warmed and lighted detached school-room in the country would be very miserable. Hence the importance not only of having such a room as this, but of having it in the house. It may, of course, also serve on occasions as a school-room, a play-room, a servants' hall, a work-room, or other domestic purpose when not required for parochial work. It should have good means of ventilation. In the country, store-closets are very necessary. A linen-closet near a fire, if possible, or containing the tank of a hot-water system, is very desirable. An architect consults his own interest in providing that the sheets are quite well aired in his client's house. A good clothes cupboard in the servants' bed-room is very useful. A bath-room is very nice, though in these days of the morning cold-water tub (every man in his own room) not a necessity. Unless funds are very ample, so that all reasonable wants can be supplied, I think the bath and the hot-water system should be provided at the incumbent's personal expense, and remain his property to sell to his successor. Cold water, it will be expected, should be laid on to the first floor, and a housemaid's sink will be necessary.

Of course, you will not connect any sinks direct with the drains. Unless the well is shallow, so that pumping water up is easy, rain water should be collected from the roof, and a supply for the first floor provided. The overflow should go to a tank in the ground. There are cases in which you have to depend wholly on rain water, and then the stowage should be very ample to cover dry seasons. In such cases earth-closets have manifest advantages. The water for the kitchen boiler ought to be filtered. When you have a deep-well and force pump, its position is of great importance, and should be fixed before setting out the house.

The Commissioners go on to provide for proper construction of the buildings. For warmth, as well as for dryness, it is desirable to use hollow walls, properly bonded. My usual practice is to have 1 ft. 4 in. hollow brick walls on the ground-floor, and 9-in. brickwork, covered with weather tiling, on the first floor.

This has many advantages (beyond the appearance) over carrying the 1-ft. 4-in. walls up the whole height. You get a far better bearing for your plates, especially those of the first floor. There are no difficulties to contend with over the heads of windows, and there is no fear of sound being conducted up the hollow from one floor to another, a defect with which I have heard hollow walls charged. I have arrived at the following section of wall. Footings in the usual way; at the level of the underside of the plate of the ground-floor, put the damp-course on the inner face of the wall only, carrying the hollow 3 in. at least below it. It is best to have the 4 in. thickness of brickwork on the outside, and the 9-in. inwards. At 9 in. below the first-floor plate build solid; the projection of weather-tiling will keep this dry. From the plate-level have 9-inch work, which, if the bricks are really square, may be built with bricks on edge, in Flemish bond, giving 4½-in. courses, into which the plain tiles can be nailed, with long galvanised nails, with heads. This work will certainly be dry. In suitable positions 11-in. hollow walls are now allowed. The Commissioners allow battening. I have seen so much of it old and dilapidated, and of about the strength of a band-box, that I have the strongest prejudice against it. For your peace of mind put a damp-course to your chimneys, at the junction of the stack and the roof, stepped up the rakes. Do not lay tiling in the London way. It is not at all understood here. Lead flashings on tiles, dressed down as on slating, are useless in the country. The other requirements of the Commissioners are of a practical kind, calling for little special remark. The table of joints is calculated to give a most satisfactory feeling as one walks over the floors. If it is in excess it is an error on the right side. I hardly know why the interior of the roof-coverings are to be pointed. It is not insisted on. Access to roofs and gutters is desirable, not only for general purposes, but because parsonages are subject to surveys at not infrequent intervals, which, from the nature of an incumbent's liability as to repairs, ought to be as thorough as possible

Do not, however, have more central gutters than you can possibly help. No one ever goes out paddling about on a roof without doing more or less harm. My own practice is, as much as possible to cover houses with a single roof (broken up and disguised, it may be, with dormers, gables, and hips), starting from a high level on one side, and running down on the other, generally towards the north, to a few feet from the ground, developing the principle of those old cottage parsonages of which we have spoken. The snow takes itself off, and the roof can be seen from the ground. How many thousands have suffered,—I speak feelingly,—in the last few days, from the pure stupidity of our ancestors, who preferred any quantity of parapet and central gutter to showing their roofs.

The requirements of the governors of Queen Anne's Bounty correspond with those of the Commissioners. No paper on parsonages would be complete that did not treat the subject of alterations. The Bounty requires in such cases an estimate of the value of the old materials which you will have to furnish. Speaking generally, bricks and stones will be, to some extent, re-usable; old tiles, when old and sound, are better than new; a few doors may be available; sashes and frames are seldom worth putting in again; old oak is very disappointing. The men object to working it on account of its extreme hardness, and the nails in it. You will, of course, see carefully if there is any lead. For the rest the old materials will hardly pay for taking down.

With a few words on alterations I will finish.

An incumbent comes to a benefice and wants the house made habitable and convenient, according to ideas of refinements of the day. From a critical point of view the old place is probably chaotic. The question is constantly asked by the neighbours,—Why did you not take down that old place and build a new house? The reply is, that for a given outlay you can get a much larger house with more accommodation by retaining as much as possible of the old place, than by the highly popular process, with those who have not to fire the moor, of clearing away and building *de novo*. I must confess, moreover, that an old place intelligently altered is to me more charming than a brand-new house. It has so many more picturesque accidents about it, while the varieties of the houses produced by remodelling are endless. You lay the plans of the old house down on paper, and then without any undue prejudice, arising from the uses to which the different parts are now put, can over how best you can bring the place into accord with modern ideas. I will mention two instances. No. 1 was a house built on the intelligent principle of putting the front door in the middle and a sitting-room on each side. There was an extremely fine view looking south, so the house fronted that way; but, unfortunately, the road came up north-west, and could by no possibility come any other way. The relationship between the carriage-drive and front door was therefore, curious. The rooms were very small, and not sufficient in number for the new incumbent. It was much dilapidated. We turned the place about as shown on the new plan. Even the one honourable defect of insufficient height we struggled with, by lowering the dining-room floor. Of course, the place is not without considerable defects as compared with an ideal; but the alteration has been much commended by those who knew the old house. Another instance was of a square-built house of the beginning of the century, of compact plan far more difficult to treat than the older place. The incumbent wanted a good library and bedrooms for pupils, while the lady was to be indulged with a bay. The study, which was close to the door, became the parish room, and the library was built. The wonderful feature of the house was its roof. It was built as a cottage *en deo*, with a thatched roof showing round the outside; but, either that no chimneys should show or because they feared fire, the flues were carried along horizontally over the level of the first-floor ceilings, and carried up in the middle of the roof away from the thatch. So extraordinary a collection of gutters, walls, and flues was, I should think, nowhere else to be seen. This was the architect's opportunity: we raised the walls, put on an entirely new roof with gables and a dormer, each containing two small windows, and intended to be divided (at the incumbent's own expense, of course) into two cubicles for the pupils aforesaid.

## MR. CHRISTIAN ON PARSONAGES.

MR. EWAN CHRISTIAN, Architect to the Ecclesiastical Commissioners, after the reading of the foregoing paper, said he should have liked to hear some of the other members of the Association on the subject.—Mr. Pease, for instance, who had built a capital parsonage in Wales, or Mr. Blashill, who knew all about parsonage-houses. Mr. Ridge, in his paper, had said very much in almost the same words as he (Mr. Christian) would have used, and had treated the subject very ably and properly, although there were some points which he had rather missed or not duly emphasised. A parsonage-house, as Mr. Ridge had said, was like any other gentleman's house in some respects, although it was unlike in other matters. For a parsonage the architect had to build for a very small sum a good house for a gentleman to live in. Very frequently the occupying clergyman would be a man who was a member of a good family, who had had ample means in his youth, and who had been accustomed to live in large houses, and who might find it, therefore, somewhat of a hardship to have to live in such small rooms as those which were compatible with parsonage-building, although he was bound to say that he had often found men of this class the most easy to provide for and accommodate, they being frequently less exacting in their demands than some of those who had not been nurtured in luxury. In considering the accommodation to be provided in a parsonage-house, the architect would be brought face to face with the difficulty that, while the clergyman for whom it was built might have considerable private means in addition to his living, and so might be able to maintain with ease a rather large house, he might, at no remote period, be succeeded by a man who had no money whatever beyond his clerical income, and to whom a large house would be a very great burden, especially when there was a large family to maintain. Mr. Christian went on to say that he would, for the benefit of the younger members of the profession, speak of the mental process which he underwent when engaged in looking over plans of parsonage-houses submitted to him officially for examination. First of all, with regard to site, he expected to have a plan with the points of the compass marked on it so as readily to see what would be the aspect of the building. In this matter he was, of course, speaking solely with regard to parsonages in the country, where there was generally a choice of aspect. In this connexion architects should never forget that if a house was to be a healthy habitation, it must be so situate as to get all the sunlight possible. He had found so much difficulty sometimes in persuading parsons, and even architects, of the necessity of sunlight that he had inscribed in his office an Italian proverb which he fortunately heard quoted while attending one of Professor Cockerell's lectures. The proverb in question was, "*Ove non viene il sole, viene il medico*," which, translated, was,—"Where the sun does not come, the physician must." That proverb had stuck to him ever since, and he was a thorough believer in it. Two of the first persons who saw the motto stuck up in his office were architects,—one of them very well known to the Association, viz., the late Mr. Edmund Sharpe, who, curiously enough, wanted Mr. Christian to build him a parsonage, but told him that in the proposed building it would be impossible to carry out his views as to sunlight, there being nothing to the south of the site but the church, which had been erected from Mr. Sharpe's own designs. He (Mr. Christian) did not believe in the impossibility of getting the sun into the proposed building, whatever there might be to the south of it, and he subsequently found that he was quite correct in his anticipations. He quoted the particular case of a house in Warwickshire, where the only view to the south was into the back elms of a manufacturing village, there being a very beautiful view to the north. Even in that case he found it practicable to get the sun into the rooms of the house without adopting the disagreeable outlook. Therefore, he did not believe in difficulties,—he never had, and never should. When, in looking over plans submitted to him, he objected that the sunny aspects of the site had been overlooked, he was often answered either by the parson or the architect, or both, that it would be impossible in their particular case to get the sun into the house, because there was a mountain, or something else which would prevent the rays of the sun from shining into the building. Three

times in the course of a great number of years he had given way under such representations, but in each case, when he had afterwards seen the buildings, he had found that he had been quite wrong in yielding, because with the slightest ingenuity on the part of the architect, and but for the obstinacy of the parson, the sun could have been let into the house. Therefore sunniness of aspect was the first point to engage his attention. Then came another point frequently overlooked, not by Mr. Ridge, but by some men who had essayed the planning of parsonages. In parsonage-houses where there were small incomes, the economies of the house should be considered. He was sometimes persecuted by seeing rooms which would not be, perhaps, much larger than demanded by the requirements of the Ecclesiastical Commissioners, say 16 ft. or 18 ft. by 14 ft., having nearly the whole of their wall space filled with windows, there being sometimes as many as five windows provided to one room. When it was considered what that meant it would be seen to be a thing of greater moment than would at first sight appear. Every one of those windows required to be furnished with curtains and blinds, and with shutters which would in most instances have to be closed every night. All this involved not only first outlay, but a continual amount of servants' labour, and the cost of servants' labour was a very important point in a parsonage-house. In parsonage after parsonage which he had visited throughout the length and breadth of the land, he had found only a single servant. In fewer instances he had found two, and in rare instances three; but in a very large number of parsonages only one servant was kept, and how was it to be expected that one servant could keep clean and tidy a house in which everything was overdone and so devised as to involve constant labour and attention? When, therefore, engaged in planning a house of any kind, but especially a parsonage-house, the architect should look to the economies not only of furnishing, but of servants' labour. Wherever there were needlessly long passages, caused by want of proper planning of the various portions of the house in relation to each other, there was involved an amount of servants' labour which was sheer waste. Then there had to be borne in mind other economies, such as economy of heating and fuel. A great many of his friends,—and especially his young friends,—were very fond of the aesthetics of building, and they liked to put their chimneys on the outside. He (Mr. Christian) liked to see chimneys on the outside when built after the old fashion, with good massive bases to them, 5 ft. or 6 ft. thick, such as were to be seen in some of the old manor-houses. Such chimneys as those would retain the heat inside the building, and not allow it to vanish into the outer air, as would some of the wretched and starved outside chimneys now too often seen in modern buildings. Outside chimneys, if properly constructed, possessed the advantage of readily admitting of a supply of fresh air, but it should be remembered that the parson, as a rule, had not much money to spend on coals, and therefore it was of great importance that his house should be warmed at the least possible cost, which could certainly be better done by having the chimneys inside the building wherever possible, instead of in the outside walls. It was also necessary that the staircase and the hall should have plenty of fresh warm air, for unless that were the case the house would never be thoroughly wholesome or comfortable; nor should windows for lighting and ventilation of the staircase be forgotten. He often had submitted to him plans in which the staircase was right in the middle of the house, and without any means of ventilation. That was a very bad arrangement for the hall and staircase, properly treated, were really the lungs of a house. He held with Lord Bacon that "Houses are built to live in, not to look on." Where the architect had to deal with a parson who was obstinate, and insisted on having work done that ought not to be done, he should not give in to him. As to matters of construction, Mr. Ridge had spoken of hollow walls, and had recommended a thickness of 9 in. inside and 4½ in. outside, in which he (Mr. Christian) entirely agreed as a matter of construction, because all the bearings of the floors naturally come upon the internal wall; but with this arrangement there was the difficulty—and it was a great difficulty—that with a hollow wall 4½ in. outside, and 9 in. inside, the inner and outer portions could not be properly bonded unless with very expensive bricks, such as Jennings's

or other bonders, which would bring the cost up to more than that of an 18-in. solid wall. It would be absurd to think of bonding such hollow walls with iron ties, because if a hollow wall were to be bonded well and soundly with iron it was necessary to use a good substance of iron; for if the water came through the external 4½ in. of brickwork,—which it would unless the brick was very good,—the small iron ties would speedily rust to decay, and then away would go the whole of the wall. Therefore, though theoretically the 9 in. was better on the inside, and the 4½ in. on the outside, he thought that, all things considered, it was better to put the 9 in. of wall on the outside, and the 4½ in. inside. The bond usually used in hollow walls was, he thought, generally insufficient. The best kind of hollow wall, where funds permitted, was to have two thicknesses of 9 in. wall, bonded with hard, hollow brick, with a cavity of 3 in. Hollow walls were a great aid to warmth, comfort, and dryness, because, in point of fact, they interposed a blanket of air between the air of the room and that outside the building, and so equalised the temperature, making the cold in winter and the heat in summer less felt than was the case with solid walls. Many years ago he had to make an addition to a house near Wolverhampton; it was a very good house, built with a 14-in. wall. It was a house of some interest, inasmuch as it was the birthplace of Hækissson, the statesman, who was killed on the day that the Liverpool and Manchester Railway was opened. Well, in building the addition to the house, which cost about 6,000*l.*, he (Mr. Christian) built all his walls hollow, on the principle of which he had spoken, viz.,—two 9-in. walls with a cavity between them, and the old solid 14-in. walls he ceased with a solid 9 in. of new work. In the month of November, after the work was executed, there came one of those sudden changes to very warm weather from very cold, and a morning or two after this change of temperature he had letters from all parts of England from people who complained of the dampness of their walls internally because they had not the wit to see that it was the result of condensation. He was anxious to know what was the state of things in the house he had mentioned, and was informed that the whole of the walls (hollow) in the new portion of the house were perfectly dry, although the walls of the old part of the house (solid, 21 in. thick) were running down with water, as badly as any of the walls of neighbouring houses. Mr. Ridge had very properly said that parsonage-houses were not the buildings for the display of fancies; but he (the speaker) constantly had plans sent to him showing flimsily-constructed carved barge-boards, perhaps in pitch-pine or deal, without any proper provision for durability. He also very properly objected to such things, for parsonage-houses must not be built of materials that would rapidly decay or require constant painting. Mr. Ridge had not said anything about drainage or soils, although he had very properly spoken of the value of earth-closets under certain circumstances. With regard to window-glazing, Mr. Christian strongly condemned what he called the "architectural fad" of filling the upper portions of window lights with ridiculous little squares of obscure glass, shutting out the light of heaven. That was a serious mistake, and was now being copied by the speculating builders, as any one could see who walked along that wonderful "*Fitzjohn's-avenue*," at Hampstead. It was absurd to shut out the light of heaven, and the practice could not be too strongly denounced; for it was oftentimes a great relief for people to be able to see the ever-changing and beautiful sky as they sat in their rooms, while the inability to do so had a most depressing effect. It was, he believed, a well-authenticated fact that in a "model" prison, conducted on the "silent system," many of the prisoners went mad, and after architects, surveyors, and medical men had been called in, unavailingly to explain the cause, a lady who was in the habit of visiting prisons was asked to see if she could detect the cause. She noticed that all the windows were glazed with obscured glass, and recommended that it be taken out and replaced by clear glass. It was done, and from that time the lunacy ceased. It should not be forgotten by the architect who was engaged on a parsonage to provide plenty of cupboards, shelves, &c., even though at the cost of sacrificing some little piece of "pretiness," for, again to repeat Lord Bacon's maxim, a house should be built to live in,—not to look on. The Ecclesiastical Commissioners allowed

































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































































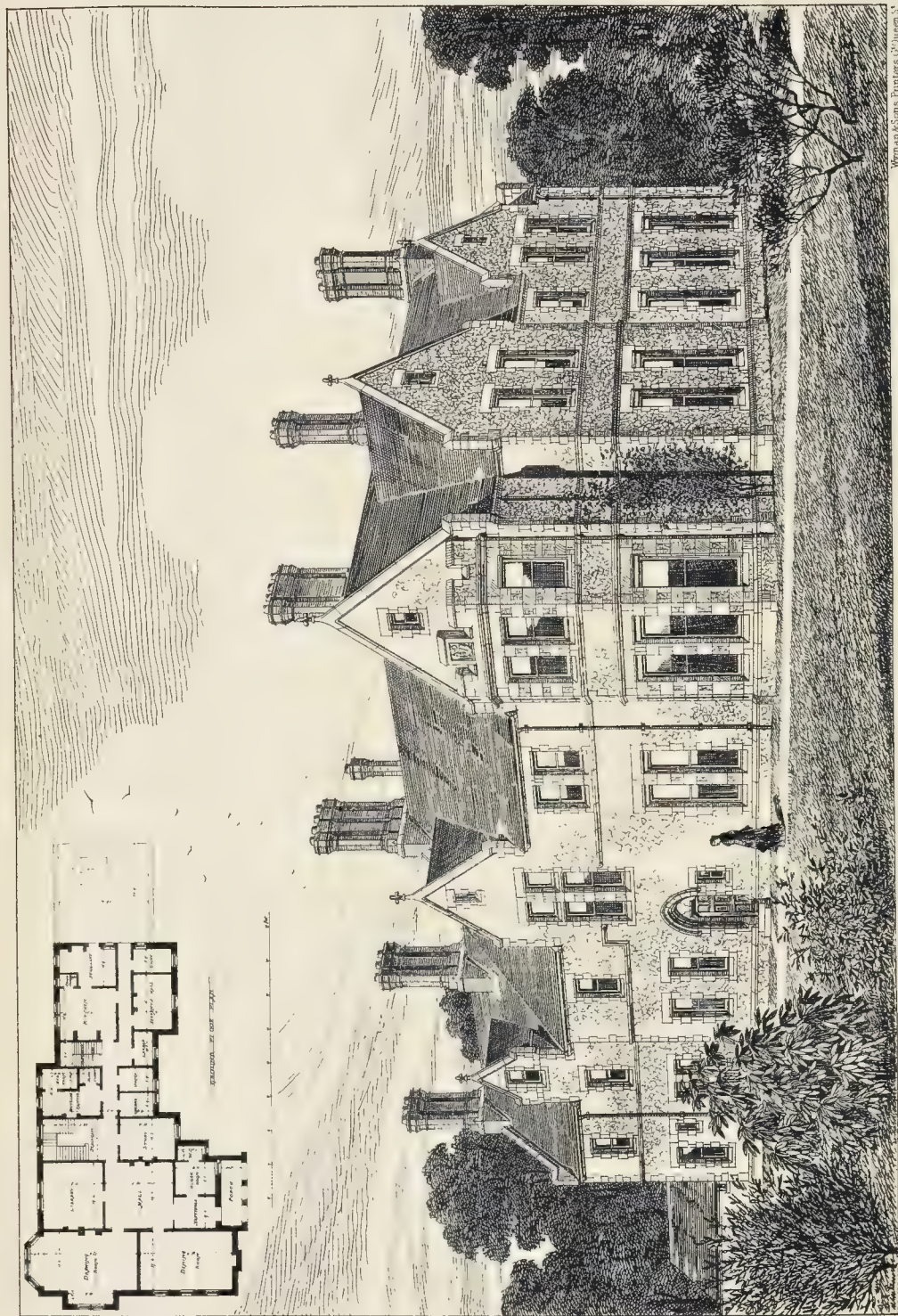


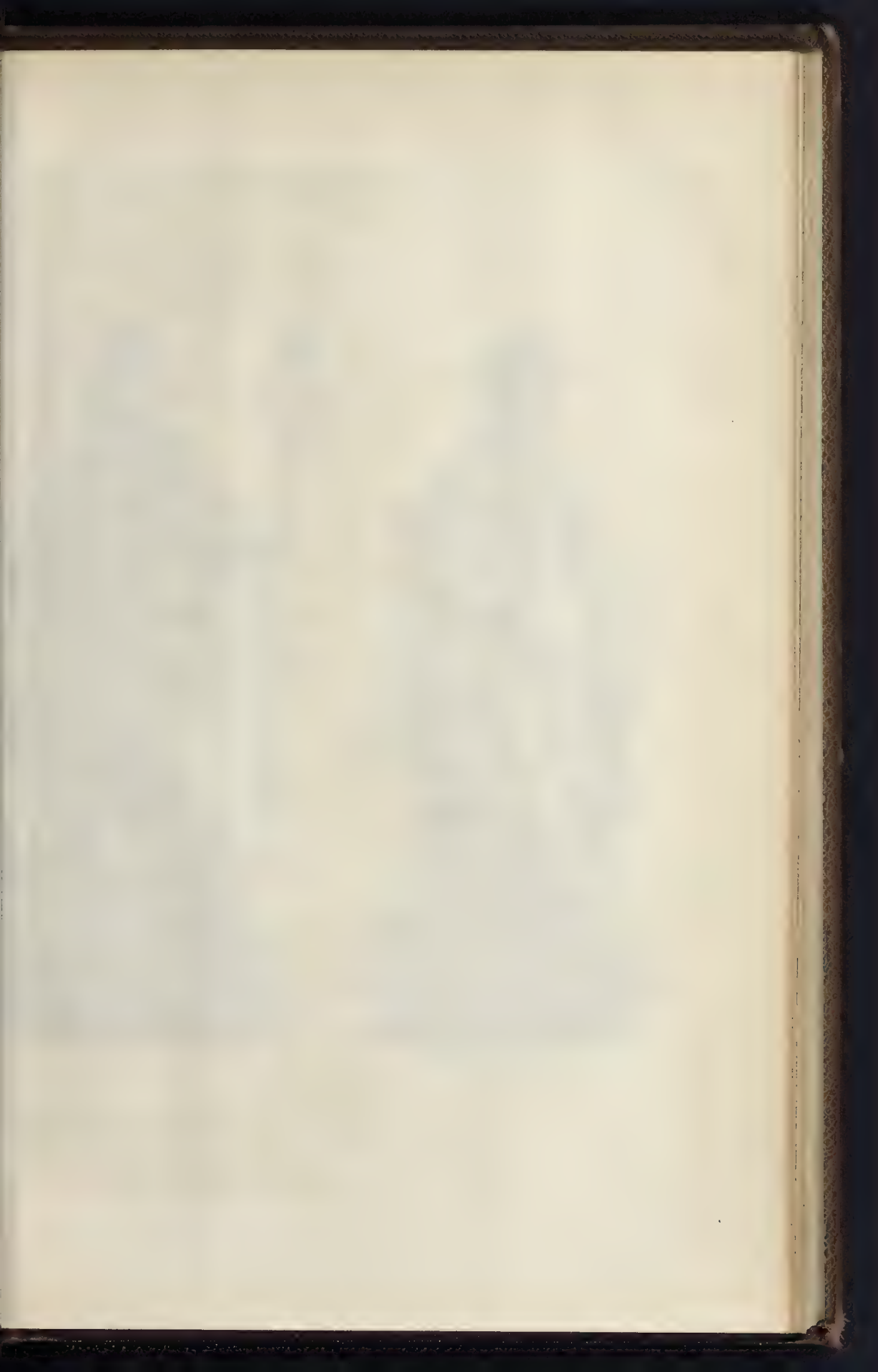






THE BUILDER, JUNE 11, 1881.







GREECE



ROME.



ITALY.



SPAIN.



OAKFIELD GRANGE, SEVENOAKS. — ENTRANCE FRONT.

Wyma &amp; Son's Printers G'Overn S'

Mathematics Department, University of California, Berkeley, CA 94720-1380



## SCULPTURE AND ARCHITECTURE.

THE NEW PICTURE GALLERY, KASSEL, GERMANY.

The celebrated Kassel collection, once sadly despoiled by Napoleon I. (in consequence of which act it was deprived for ever of a valuable portion, which later went to Russia), and in Electoral times closed to the public, was reascotated when it was removed from the dingy rooms it originally occupied to the handsome new building prepared for it. The site of this edifice, erected from the plans of Baurath von Dohn-Rotfeler, is in the best street of the town, in the so-called Bellevue, which, lined with houses only on one side, affords a splendid view from the eminence on which they are built over the green foliage of the Anepark, and beyond the latter as far as the mountains which bound the horizon. The south front of the new building has a loggia in the first story, from which elevation the charming view may be enjoyed. The edifice is in the Roman Renaissance style, the material being a reddish sandstone. It consists of a central portion and two corner pavilions. The latter are surmounted by flat pediments, the tympana of which are filled with youthful figures in lighter sandstone, representing history, *genre*, animal, and landscape painting, architecture, and sculpture. In the pediment over the portal in the eastern pavilion is the portrait of the founder of the gallery, William VIII., surrounded by geni. At both sides of the large central window over the entrance are niches containing the figures of Rembrandt and Rubens, the two masters to whom the gallery is indebted for its world-wide fame. All this sculpture is the work of Professor Hasselplagg.

The interior of the building is in keeping with its object. On entering the vestibule, a view is obtained up the staircase of dark grey Nassau marble to the entrance of the first room. On each side of the vestibule is a similar hall, divided from the former by two Doric columns of dark grey marble. The stairs are lighted from above, and the effect of this arrangement, the light striking down upon eight marble statues placed upon the balustrade, is admirable. These statues, by Karl Boettermeyer (four of which we illustrate), represent Greece, Rome, Italy, Spain, Germany, the Netherlands, France, and England. In the case of Greece, the sculptor has followed strictly the rules of the Greek classic, while in that of Rome he has proceeded more realistically, inserting the pupil of the eye, and otherwise adopting a freer treatment, imitating the Roman manner. The mediæval figures such as Italy, Spain, Germany, Netherlands, France, and England, the sculptor has conceived in a Romantic sense, and makes the last three entirely realistic. Italy has the pontifical staff in her right, an allusion to the great influence of the Church in the most flourishing period of art in Italy. The same sentiment is expressed in the case of Spain by the rosary and cross round the neck. Germany is portrayed by a modest maiden in the costume of the age of Albrecht Dürer. The Netherlands are given in the form of a wealthy burgher's wife in rich satin dress, similar to Van Dyck's representations, holding a palette and brush, the sculptor thus reminding us of the excellence of colouring of the Netherlands and the introduction of oil-painting there. France is a figure robed in a flowing raiment of fleur-de-lys, full of proud self-confidence, and wearing a laurel wreath. England,—which in the eyes of foreigners has no independent art epoch of its own, but which has deserved well of modern art by its splendid art collections and the publication of standard works on art,—the sculptor represents as leaning in passive attitude on a broken obelisk, the right foot resting on a Greek capital, and holding in the left hand a book with the inscription, "Archæologie."

Prepared thus for the artistic enjoyment which awaits him, the visitor enters the four rooms of the central portion, all lighted from above, the open doors of which at once permit a view of the jewel of the Kassel Gallery, in the last room, the portrait of the Marquis de Guasto, by Titian. The arrangement of the light originated with the late Professor Magnus, and serves to demonstrate the correctness of the principles upon which he proceeded. Only the Antwerp Gallery is equal to that of Kassel in the happy distribution of light. The arrangement of the paintings according to schools is effected in such a manner that in the three skylighted rooms of the central portion, and the three adjoining cabinets with north light, the

paintings of the most flourishing period of the Dutch school are placed; those of the oldest Dutch and the German schools being arranged in the rooms of the eastern pavilion, and those of the Italian school and the schools most nearly related to it in the western pavilion with its skylight room (the fourth of the whole series). The style of the decoration of the rooms corresponds with their contents.

The spacious rooms of the Kassel Gallery afford ample scope for a proper display of the pictures which it contains; and it may be said that the whole makes the impression of a richly and harmoniously adorned private palatial residence rather than of a picture gallery erected on purpose.

## MONUMENTS.

WHEN "friends are lapped in lead," the provision of a fitting monument is usually one of the first cares of the survivors. Their motives for this tribute are mixed, as human motives are wont to be; and obedience to a respectable conventionalism, or a desire to give the deceased a *quid pro quo* for his handsome legacies, have often as large a place in them as respect or an honest enthusiasm to keep green the memory of the defunct. If people are millionaires, can draw upon the funds of a generous subscription, or have the public purse—strips loosened for them, they call in the services of the Roubilliac of the day, or of the esteemed architect whom every one applauds; but if they are ordinary folk, they go to a shop for their monument, and content themselves with a tradesman instead of an artist. The cemetery stone-mason is a thriving shop-keeper, and has his patterns, just as his neighbour, the tailor, has. He follows the shifting tendencies of art at a respectful distance, and his clients are, as a rule, willing to fall in with the prevailing fashion in stonework as enunciated by him. They select what he recommends as "quite the latest thing," or, at any rate, do not exercise their independence further than to choose one of those perennial designs whose crude symbolism has such hold upon a certain order of minds. Of these stock-pieces the stone-mason has generally a number on hand, graduated to suit the pockets of his customers.

Whilst 5*l.* is perhaps the lowest sum for which a monument can be erected, the prices of some of the more imposing ones would astonish any one not acquainted with the costliness of this kind of work. As much as 7,000*l.* or 8,000*l.* is said to have been paid for some of the larger monuments in Kensal-green. If we consider only the cost of materials before skilled labour is bestowed upon them, polished granite is, perhaps, the most expensive of all. This fine stone is almost always shaped and polished in Scotland, where masons work at a cheaper rate, and the necessary machinery is on the spot. So dear is this process of polishing granite, that its cost often exceeds the value of the raw material operated upon. The pure white marbles of Carrara, hewn from the sides of the most picturesque of European mountains, rank next in point of price. When employed in cemetery work, they are not polished, since the nitric acid used for that purpose so impairs their surface that it perishes when exposed to the open air for any length of time. Portland stone, of which so many of our public edifices are built, is cheaper, and wears very well, and is consequently in considerable demand for headstones. But when laid upon or near the ground, it is apt to become disfigured by delicate vegetable growths. This liability to discolouration it has in common with the free-grained friable stones such as those of Caen and Bath, which are unsuitable for monumental purposes. Only the finer and harder stones, and York stones, so much in request for pavements, are exempt from this failing. Hence it is that York stone, in slabs of from 5 in. to 8 in. thick, so frequently forms the foundation of a monument. Although many stones harden a little by exposure under ordinary conditions of climate, yet the atmosphere of London, as compared with that of rural districts, has a marked tendency to decay and deteriorate them. When this is attempted to be counteracted by the use of paint, if the stones be wet, or even damp, when the paint is applied, it is almost certain to come off, and leave them in a shabbier state than they were in at first. A material having been chosen and rough-hewn to the desired shape, if it is to be ornamented or to have figures upon it, the aid of the stone-carver or sculptor must be invoked.

He will generally be found to work from a drawing, not extemporising or elaborating his own fancies into "frozen music," as the cathedral masons of old were wont to do. Portland stone is principally carved by Englishmen, but a great deal of marble work is done abroad, whilst granite is dealt with by the canny Scot "at home." Of late years there has been a considerable importation of "ready-made" monuments into this country from Italy. Many of the best stone-carvers at work here are Italians, and the most expert amongst the English ones have studied in Italy. It would not be difficult to explain why Italians were brought over to sculpture the tombs of Henry III. and Henry VII., but at present the phenomenon of the employment of foreign stone-carvers to execute works comparatively simple may, perhaps, point to some deficiencies in our art and technical schools. Since a monument without an inscription would be simply an enigma in stone, the services of the letter-cutter or engraver are next enlisted. Elaborate epitaphs do not seem in accordance with modern taste, and the melancholy record, even in the case of the most distinguished persons, is now mostly confined to a bald statement of the name and years of the departed. The "shapeless sculptures" of Gray are still common, but the day of "uncouth rhymes" is nearly over. Inscriptions and designs have now to be submitted to the clergyman of the parish or the authorities of the cemetery, and though a mirth-provoking piece of statuary often passes the official censors, any verse or prose that might provoke a smile by its rugged originality or unconscious humour is sternly rejected. Yet, in spite of all this care, the letter-cutter will occasionally make a mistake, and impart a jocular flavour to an entire inscription that is as much out of place as the parenthetical "laughter" in the report of a trial for murder. Letters are chiselled or engraved in ordinary stone, and are then blacked with oil paint, by means of which any slight inaccuracies in their execution can be corrected. But this process of painting is not adapted for marble; paint will not sink into a material so little porous, and soon peels off. Granite has to be very carefully worked, since it is very apt to crack and crumble. The letters cut in it are then usually gilded. The more expensive method of lead-lettering is recommended by its durability. The letters being cut to the requisite depth, several small holes are made at the bottom of each of them. Each hole is directed at a different angle to the surface of the stone, and when the lead has been hammered in the letters are secured from the possibility of falling out. Lead is not poured in in its molten state, but hammered in cold, as any great degree of heat would burn and injure the enveloping substance. Brass letters are rarely employed, and are fixed to the stone by a mode of "plugging" somewhat similar to that just described. The character used should, of course, be in harmony with the monument, Old English or German text going with the Gothic style, and Latin with the Classical. The letter-cutter, who is paid at uniform rates per letter, including capital, charges, as is but just, on a much higher scale for the more complex detail of the first-named characters. The monument being finished, the jacks, the levers, and the rollers that are to move it may not have to be called into action for some time after interment. A space of from three to six months must be allowed for the ground to settle. Despite this precaution, the fall of a monument is by no means an unknown accident, and this contingency is perhaps the *raison d'être* of a common regulation, limiting their weight when not upon the solid substructure of a brick vault. At last the task is completed, and the new memorial shines in short-lived purity amongst its dusky neighbours. Then comes the "dreadful reckoning." The stonemason has not many bad debts, but he is often troubled with entreaties to reduce in size or to abandon some half-finished monument ordered before the first excess of grief had passed away. If he cannot grant these petitions, let us hope he takes to heart the wholesome moral they point.

Looking around at the productions of the cemetery-mason, one is struck by the large preponderance of crosses. It is not many years since these were only to be seen above the graves of Roman Catholics. Now they are fashioned by hundreds, and in endless variety,—Greek, Maltese, floral, plain, rusticated,—ornamented with scrolls and adorned with doves. Obelisks and sarcophagi are favoured by the

wealthy, and the draped urn has survived the keen shafts of satire so often directed at it. The broken column and the weeping willow are apparently out of fashion, and have been supplanted by figures of Faith and Hope, bearing appropriate emblems. A few monuments here and there are cleverly designed and skilfully executed, but good and bad are equally lost in the crowded confusion of a metropolitan cemetery. On the whole, this branch of art does not appear to have profited much by the loud and constant teachings of those who have superintended the new Renaissance.

#### WEDMORE CHURCH, SOMERSET.

THE fine and interesting Church of Wedmore, Somerset, was re-opened on June 1st, amid great rejoicing, the occasion being observed as a public holiday, a very large assemblage of people from a distance being present. As the remains of King Alfred the Great's Palace were recently found in the parish (the excavations having been zealously prosecuted by the vicar, the Rev. Sydenham H. A. Hervey), and the celebrated Peace of Wedmore was signed here after the defeat of Guthlac the Dane, the associations of the place, independently of its fine church, are attractive. Originally a simple aisleless cruciform church, built at the end of the twelfth and commencement of the thirteenth centuries, extensive enlargements and alterations to it were made during the Perpendicular period. There are two large chantry chapels on each side of the chancel, and another one between the north transept and the porch; also aisles to the nave. In the north chantry roof an interesting Medieval representation of the *Tri Descent* remains. Over the porch are two rooms, i.e., one above the other, forming a double-storied parlour, and externally having a striking effect, giving the appearance of a small tower. These rooms are generally considered to have been occupied by the priests to the chantries. During the last twelve months extensive reparations to the fabric of the church have been in progress, while the interior has been entirely re-arranged and new floors and fittings put in, all the windows reglazed, besides many other works. Some remarkable discoveries have been made; for example, a beautiful doorway with traceried windows on each side on the east side of the porch, between that and the "old chapel," as it is called (a chantry),—a most unexpected discovery. Behind the panelling under the sounding-board of the old Jacobean pulpit (the latter has been refixed on a low Ham Hill stone base) a tempera painting of St. Christopher was found, which consisted of no fewer than three paintings one over another, portions of which have been able to be preserved so as to make almost a complete whole. A preservation process was applied by Messrs. Lavers & Co., of London, by direction of the architect, as the exposure to the air was rapidly destroying the painting. The old rood-stair turret-door, the remains of a clear-story to the chancel, and the drip showing where the old Early English roof of the chancel existed, have also been found.

Although the walls of the church were in a fine condition, they were coated with rough-cast, which has been removed, opening to view the pleasing colour and texture of the Wedmore stone. The Perpendicular windows and the south Early English doorway have been repaired where necessary, and a good deal done to the porch and parlour, i.e., new floors of oak, handsome moulded oak ceiling, and a new roof, and tracery to the windows. The roofs to the south aisle and the various chantry chapels have been strengthened and scarfed as necessary, and a new leaden roof put to the north aisle. All the walls internally have been cleansed of white-wash and yellow ochre, and rough stuccoed. The modern pewing and west gallery have been removed, and the entire church re-seated with English oak open benches, with thick moulded solid square ends. The choir-seats have been arranged under the central tower, and are also of English oak, but of a richer design. The church has been repaved with the old stone as far as possible, and new Keinton paving to match added. Many other minor works of repair have been effected which it is needless to specify. Beyond re-plastering and new floors and the restoration of the south window, nothing further has been effected to the chancel. The latter work was done by the Ecclesiastical Commissioners, under the direction of their architect, Mr. Christian. A Portland cement floor

has been laid in the north transept, where the organ, rebuilt by Mr. Willis, is put. All the windows (except to the chancel) have been reglazed with cathedral rolled glass and clear white glass, in ornamental patterns of varied design, some old diaper quarries being re-used. The old stanchions and saddlebars have been retained. The ground externally has been lowered, and the drainage of the churchyard improved. Two of Porritt's underground stoves have been put in different parts of the church. The tower parapet has been strengthened at the angles, and the flat relaid with lead, and a better system of carrying off the water contrived. The bells have also been rehung.

These works to the body of the church have been carried out, under the superintendence of Mr. Edmund B. Ferrey, by the builders, Messrs. Fredk. Merrick & Son, of Glastonbury, who were also the contractors for the work to the chancel.

#### CO-OPERATION AND THE WAGES QUESTION.

ON Monday last the thirteenth annual congress of delegates from co-operative societies in Great Britain and Ireland was opened in Leeds, when

Lord Derby delivered an address, in the course of which he said,—What I understand to be your distinctive principle is this, that the worker should be paid according to the results of the work; that he should be wholly or in part his own employer. Now, what an outsider or casual inquirer would naturally ask about that principle is, how does it act as regards quantity and quality of industrial production? How does it affect the happiness and comfort of those who adopt it? And how does it bear on the relations between labour and capital? These three, I think, are the main heads of our inquiry. As to the first, it must strike any impartial observer that more work is likely to be done, and that it is likely to be better done, on the co-operative system than on that of ordinary wages, and for a very simple reason. In the former case every man is working for himself,—for others also, no doubt, but among others for himself; in the latter case he is working for an employer with whose interest he cannot be expected to identify himself very warmly. In co-operative industry the master's eye is everywhere. I have heard it affirmed, —whether truly or not I cannot judge,—that in occupations where men are hired by the day, it is an unpopular thing for any one to do more than his mates, and that the exhibition of more than ordinary industry and skill is likely to be resented rather than imitated and admired. But introduce co-operation, and every working man is an employer and an over-looker too. The master's eye is literally everywhere. Slow work or scamped work means so much less return to the associated body, and those who are working together have the strongest possible interest, not only in doing their own appointed task, but in seeing that everybody else does his. Then as to the effect on the workman himself. It is a commonplace to say that labour in which we take a keen interest almost ceases to be labour at all, and that a very light task performed on compulsion and as mere drudgery is felt to be heavy. And if, at the same time, the worker knows that in every stroke of work he is helping his own comrades, not palling against them; that the more he does the more he earns their goodwill, and not their envy or jealousy; and if, further, he has reason to suppose that, in however subordinate a capacity, he is helping on a movement which is for the permanent benefit of his country, he has motives to impel and feelings to encourage him which the ordinary labourer has not, and which may very well carry him over difficulties and discomforts such as are incident to every form of employment. It is sometimes objected, "Division of profits is very well where there are profits to divide; but how if there are no profits, only losses?" Well, to that I answer, "Supposing a private business, be it a mill or a shop or anything else, collapses in consequence of bad times, is the man who works in it for wages free from the results of failure?" No; he loses his employment, and in a dull state of trade he may not, possibly, find another. The utmost that he gains is that his wages may be kept on a little longer while the employer is slowly consuming his capital; and if a co-operative undertaking, no matter what, be worked with skill and care, it ought to be able to command as

much capital to meet a temporary emergency as a similar undertaking in private hands. My third point is that of all the ten thousand schemes hitherto proposed,—and there is a new one about every six weeks,—for closing the long-standing differences between labour and capital, co-operation is that which promises the largest results with the fewest drawbacks. I will not occupy time by speaking of what we all know; the waste of capital and the waste of labour (which is the same thing), the ill-feeling, the bitterness, which trade disputes carry with them. In such disputes we feel that the result is lamentable, yet we hardly know whom to blame. Is the capitalist wrong in refusing to pay higher wages than the market price? Certainly not. He is not bound to do it, and if he did, his neighbour who has fewer benevolent impulses or scruples would undersell him. Is the working man wrong in trying to get the best price he can for his labour, and in combining with others for the purpose? Certainly not. It is both his natural and his legal right. Yet, both being in the right, millions of money are squandered, social feuds are created, sometimes riot and disturbance follow. Where there is on both sides a wish to discover reasonable terms of peace the intervention of an impartial third party who shall hear both sides and decide is often effectual in bringing about an understanding. But arbitration is not always an applicable remedy; in fact, it is a remedy which can only be applied when the disease is in a fair way to be cured. Two parties to a dispute who both agree to refer it to an umpire are already half-way to an understanding; but when each is convinced of being in the right and quite convinced that the other is unreasonable, what chance is there of their consenting to refer the matter? And let me add that in labour questions, so far as my experience goes, arbitration is never a wholly satisfactory process. I have sat more than once as umpire, and never without a feeling that I was asked to pronounce a judicial decision in a matter in which really there is no law to appeal to. There is usually not much doubt as to the facts. The question whether or not such and such a payment for labour is a fair one is in its nature insoluble. You cannot untie the knot; you have to cut it, and when it is cut, when the strike is over and work begins again, though the dispute is settled for a moment, the cause of it remains, the dominant antagonism of interests is not removed. You co-operators meet that difficulty, or rather, you turn it. You say, "There shall be no conflict of interests where we are concerned, for two parties shall be identical; the employer shall be also the employed, and the profits of the one the gain of the other." It is, if I may use such an expression, like the settlement of an old family law-suit by the marriage of litigants. It ends the dispute because there is nothing left to dispute about, and what a dispute it is to end!

#### NEW HALL AT THE ORPHAN WORKING SCHOOL.

THE memorial-stone of a new hall which is about to be erected in connexion with the Orphan Working School at Haverstock-hill was laid last week by Mr. Charles Tyler, brother of Sir James Tyler, at whose cost the building will be erected. The architect, Mr. Charles Bell, exhibited the plans during the stone-laying ceremony, and stated that the architectural character of the structure would be a free treatment of the Italian style. The building will be in shape a parallelogram of 40 ft. by 69 ft., this being necessary owing to the character of the ground. He explained that there would be separate entrances to the building for children and for visitors, and that space would be provided for a good-sized organ-chamber. The building will accommodate 900 persons, there being seating space for 500 visitors, in addition to that portion set apart for the children connected with the institution. The principal object in erecting the building is to provide accommodation for religious services, and also for public examinations and distribution of prizes to the children belonging to the school. The cost of the building will be 2,500*l.* Mr. James Holliday, jun., of Loughborough Junction, is the contractor.

**Melbourne Exhibition, 1881.**—Messrs. J. Defries & Sons, of London, have been awarded a first prize medal for the manufacture of their crystal chandeliers.

## THE BIRMINGHAM IMPROVEMENT SCHEME.

## APPEAL AGAINST AWARD.

At the Council House, Birmingham, on the 3rd inst., before Mr. E. C. Heath (Under-Sheriff for the county of Warwick) and a special jury, Mr. C. J. Fletcher appealed against the award made by Sir Henry Hunt, C.B., the official arbitrator under the Birmingham Improvement Scheme, in respect of freehold properties situated in Newton-street, at the corner of Steelhouse-lane, and in Lichfield-street, and also in respect of disturbance to his trade as a machinery and tool broker, now carried on in parts of the properties mentioned.

In regard to the Lichfield-street property, which comprises 618 square yards of land containing some one-story shops and sheds, the valuers called on behalf of Mr. Fletcher estimated the land to be worth about 61. a square yard, while the Corporation valuers estimated it at about 31. a square yard. The Newton-street property comprises 1,890 square yards of land, covered with factories, shops, and dwelling-houses. On behalf of Mr. Fletcher it was estimated that the latter property was worth twenty years' purchase, and for the Corporation it was estimated by one valuer at seventeen and by two others at eighteen years' purchase.

Mr. Fletcher's witnesses and the values placed by them upon the properties were as follow:—Mr. W. Fowler (of Messrs. Fowler & Sons), 3,750*l.*, in respect of Lichfield-street property, and 10,900*l.* in respect of the Newton-street property—total, 14,650*l.*; Mr. Thomson Plewman, 3,438*l.*, and 11,035*l.*, respectively—total, 14,473*l.*; Mr. W. Gibana (of Messrs. Chesbire & Gibson), 3,740*l.*, and 11,215*l.*—total, 14,955*l.*; and Mr. J. Roderick (of Messrs. Roderick & Son), 3,388*l.*, and 11,035*l.*—total, 14,423*l.*

The valuations on behalf of the Corporation were as follow:—Mr. W. Harris, 1,848*l.*, and 7,000*l.*—total, 8,848*l.*; Mr. T. S. Fellows, 1,845*l.*, and 7,774*l.*—total, 9,619*l.*; and Mr. E. Hyde (of London), 1,804*l.*, and 7,310*l.*—total, 9,114*l.*

On behalf of Mr. Fletcher, compensation was also claimed for trade disturbance and for removal and depreciation of stock.

The jury awarded 13,250*l.* as the value of the two properties and for expenses incurred in removal of stock, and 600*l.* for goodwill, loss, or disturbance of trade, making a total of 13,850*l.*

The amount of the arbitrator's award, against which Mr. Fletcher appealed, was 12,502*l.*, and the Corporation will consequently have to bear the costs of the appeal.

## A LARGE RESERVOIR FOR BIRMINGHAM.

The Birmingham Corporation are at present greatly extending their waterworks in connexion with the supply of the town, and on Saturday the first sod of a new storage reservoir was cut by Alderman Avery, the chairman of the water committee. When completed, this reservoir will be one of the largest of its kind in the country. It will cover an area of 90 acres, and will have a storage capacity of 400,000,000 gallons. In addition there will be a smaller reservoir, capable of holding 20,000,000 gallons, into which water from the river Bourne will flow. This smaller reservoir is for the purpose of providing for the subsidence of solid impurities before the water is allowed to pass into the larger reservoir. The estimated cost of the two reservoirs is 79,000*l.*, the engines, boilers, and buildings bringing up the entire cost to 125,000*l.*

## COMPETITIONS.

*Market Buildings, Birmingham.*—At a meeting of the Birmingham Town Council, on Tuesday last, the Markets and Fairs Committee reported that they had completed the purchase from Mr. James Gilbert of his leasehold interest in the Woolpack Hotel, Jamaica-row. This acquisition having opened the way to a more important improvement than that approved by the Council in May, 1880, the committee invited three firms of architects to send in designs for the erection of the market buildings in St. Martin's-lane, including the new Woolpack Hotel, and their designs had been sent in for competition, and were now submitted to the Council. After careful consideration, the committee believed that the design and plans marked "En Avant" were the most suitable as market buildings and hotel for that site, and required the least modification to adapt them for all the purposes contemplated by the committee; they therefore recommended them to the Council for adoption, instead of the plans and elevations formerly submitted. These plans provided for hotel, with restaurant; shops, with offices over them; coffee-house and dining-room in Moat-lane; rooms suitable for superintendent's offices and residence; and a number of other rooms which could be attached to the hotel or to the coffee-house, or to the shops, as occasion or tenants might require. The service was to be constructed in red brick, with terra cotta and stone dressings. The estimated cost was 14,000*l.*;

and the committee believed it could be carried out without diminishing the estimated profit to be derived from the market improvements. Mr. M. J. Hart moved the adoption of the plans for the new premises, but two-thirds of the Council not being present it was deferred, on the motion of the Mayor.

*Birkenhead Town-hall.*—At a meeting of the Birkenhead Town Council on the 1st inst., the General Purposes Committee recommended "That the portion of the resolution passed at the meeting of the committee on the 10th September, 1880, with reference to the accommodation required for Town-hall purposes, so far as the same refers to the sessions-accommodation, be rescinded." Also, "That the sum to be expended on the Town-hall shall not exceed 50,000*l.*;" and "That the borough-surveyor be instructed to prepare a lithograph plan of the site, and the dimensions thereof, and printed instructions to architects for the providing of the accommodation agreed upon, except the Sessions House," and "That premiums of 300*l.*, 200*l.*, and 100*l.* be offered for plans for the erection of the Town-hall and Municipal Offices on the Hamilton-street site." After some discussion the whole question was referred back.

*Designs for "Posters," Liverpool.*—At the meeting of the Library, Museum, and Arts Committee of the Liverpool City Council, on the 2nd inst., the committee had before them eighteen competitive designs for posters announcing the autumn exhibition of pictures. After due deliberation, three were set apart for final adjudication. They were the work of Messrs. W. P. Gray, lithographic artist, Cable-street; Robert Fowler, artist, South Castle-street; and John A. Metcalf, architect, May-fields, Westminster-road. Ultimately, the choice of the committee for the prize of ten guineas fell upon Mr. W. P. Gray. It was also resolved that Mr. Fowler be offered the sum of ten guineas for the copyright of his design.

## HAUNTED LONDON.

The Council of the Society of Arts have just erected six new memorial tablets on houses which are of historic interest as having been occupied by celebrated men. The residence of an emperor, two statesmen, a philosopher, and two artists have been thus distinguished. These China plaques will now be found on the front of No. 15, Buckingham-street, Strand, where Peter the Great lived for a short time; on 25, Arlington-street, for many years the residence of the famous prime minister, Sir Robert Walpole; on No. 14, Savile-row, where Sheridan lived; on No. 35, St. Martin's-street, Leicester-square, for some time Sir Isaac Newton's home; on 36, Castle-street, Oxford-street, where James Barry, the painter, received the statesman, Burke; and on 30, Leicester-square, a new building occupied by Archbishop Tennyson's School, which stands on the site of Hogarth's home.

In former years the Society of Arts have marked with their memorial tablets the homes inhabited by Burke, Byron, Canning, Dryden, Faraday, Flaxman, Franklin, Garrick, Handel, Johnson, Napoleon III., Nelson, Reynolds, and Mrs. Siddons.

In connexion with one of the houses now marked an observation occurs to us. At the bottom of Buckingham-street, Strand, and overlooking that interesting relic of the river-line of the now embanked Thames, Inigo Jones's York-gate, the Society of Arts has marked with one of their blue plaques the last house on the east side (No. 15) as having been once the residence of Peter the Great.

In the last house on the west side of the street lived the sprightly diarist, Samuel Pepys, and it was in this house, in the belief of a writer so familiar with London as Peter Cunningham, that Peter the Great resided.

*The Parish Church at St. Ewe, near Mevagissey,* contains the finest old rood-screen in Cornwall. It is made wholly of oak, carved, groined upon its eastern as well as its western side, and has a wide rood-loft on its top. Through the exertions of the Rev. A. Lawrence, the present rector, the church itself is being restored from the designs of Mr. James Pier St. Aubyn, of London; and under his direction the old screen is now being restored and lengthened by Mr. Harry Hems. St. Ewe Church is one of the few old churches in the West Country which can boast of a spire.

## PATENT RECORD.\*

## ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending May 28, 1881.

4,067. J. B. Pickard, Leeds. Closets and ashpits.

The ashpit is placed between two closets. The whole of the ashes fall on inclined plates, which allow the finer ashes to fall through on the excreta and deodorise it. The coarser ashes fall into a receptacle provided for them. October 6, 1880. Price 6*d.*

4,073. W. H. Saint-Aubin, Willenhall. Fastenings for carriage-doors, &c.

This is applicable also to other doors, sashes, &c. The lock consists of two main parts—a striking bolt and a square-headed bolt. The striking bolt, which is bevelled each way, is carried on a vertical shank, working on a stud at the lower end of the case, and a little back from the fore-plate. A spring presses it forward. The tail end of the square-headed bolt projects downwards, and carries a stud which gears into a slot within the horn of the follower. This is also pressed forward by a spring, and is guided by a stud projecting through a slot formed in it. A part behind the head of the striking bolt is formed a convex curve, and a corresponding concave curve is formed on the underside of the square-headed bolt immediately behind the part which is shot forward through the fore-plate. October 7, 1881. Price 6*d.*

4,196. W. Love, Glasgow. Apparatus for heating and ventilating by oil or gas, &c.

Air is led to pass over extended and circuitous metallic surfaces, heated by gas or oil, enclosed in a stove casing, and then delivered into the apartment to be heated. Several modifications are shown. Oct. 15, 1880. Price 6*d.*

4,246. C. Giuliano, Piccadilly. Ventilating, &c., buildings.

A shaft is erected from top to bottom of the building, in which may be ladders, as fire-escapes. There are doors in each story to this shaft, in which are ventilators. Above the roof a fan is placed, revolved by driving cords and weights, and a hood projects the air from the fan, horizontally (Pro. Pro.) October 19, 1880. Price 2*d.*

4,251. J. H. Greathead, Westminster. Portable Hydrant.

This is a modification of patent No. 4,738, of 1873, to cases where there is no low-pressure main, but only water, as in a dock, &c. A pipe is fitted with three nozzles; one for the hose or suction-pipe, another to be connected to the nozzle of the high-pressure main, and the third for the ordinary fire-hose. Within the pipe the high-pressure branch terminates in an injector-nozzle, which draws up the water through the suction-pipe, and causes a proper discharge. Oct. 19, 1880. Price 6*d.*

4,284. P. Maclellan, Glasgow. Indiarubber matting, tread, cushions, &c.

The indiarubber has a series of flutes or interrupted corrugations formed in it, by slitting it in the desired pattern, and by mandrills forcing the solid rubber between the slits alternately upwards and downwards, and it is then vulcanised, whereby these flutings are rendered permanent. Oct. 21, 1880. Price 6*d.*

4,292. D. S. W. Dawe, Brading. Manufacture of Portland cement.

This is to convert fossil limestones and fresh-water marl into cement. The materials are first dried, and then ground to a fine powder, which is afterwards submitted to a triturating process in a mill, and sufficient water added to permit the mass to be made into bricks. These, after being dried, are placed in a cement-kiln, and converted into a clinkered mass, which is then again ground into powder, and the cement is formed. Oct. 21, 1880. Price 2*d.*

4,337. W. B. Lake, Southampton-buildings. Circulating medium for heating apparatus.

Instead of water as the heating medium in pipes, &c., a solution of chloride of magnesium is used, which will not freeze and does not evaporate. (Com. by B. Bernhardt, Salsfurt, Germany.) (Pro. Pro.) Oct. 23, 1880. Price 2*d.*

## SALES OF SUBURBAN BUILDING SITES.

A FEW evenings ago there was a large sale, at the Feathers Hotel, Ealing, of a number of freehold building sites, on the Castle Hill Park Estate, Ealing, the property of the British Land Company. Mr. W. H. Collier conducted the sale. The total number of sites offered was 150, the greater portion of which contained frontages of 20 ft., with a depth varying from 160 ft. to 220 ft. Of these, ninety plots were sold at prices ranging from 100*l.* to 150*l.* each. A corner plot having a frontage of 110 ft. to Kent Gardens, and 199 ft. to Victoria-road, realised 300*l.* Another plot having a frontage of 65 ft. to Castle Hill Park-road, and an average depth of 194 ft., fetched 320*l.*; and an angular plot, having a frontage of 154 ft. to Castle Hill Park-road, and an extreme depth of 144 ft., was sold for 250*l.* The aggregate proceeds of the sale amounted to 9,700*l.*

Messrs. Protheroe & Morris offered for sale, at the Angel Hotel, Ilford, seventy-one lots of freehold building land, forming the fourth portion of the Clements Estate, at Ilford, comprising an area of about 100 acres. Nearly the whole of the plots were sold, those having a frontage of 20 ft., and a depth of from 150 ft.

\* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

to 160 ft. realising 65l. and 70l. each, whilst some larger plots fronting High-street, the main road, with frontages of 25 ft. and 28 ft. each, were sold at prices ranging from 135l. to 200l. each.

#### THE LONDON AND LANCASHIRE LIFE ASSURANCE COMPANY'S NEW BUILDINGS.

THE handsome new block of buildings in Cornhill, which has for some time past been in course of erection for the London and Lancashire Life Assurance Company, is now almost completed, and is expected to be occupied by the company in the course of a few weeks. The buildings have a frontage to Cornhill of about 55 ft., and are 65 ft. 6 in. in height, containing ground-floor and three lofty floors, with dormers. The base of the buildings is in grey granite, with double columns in the same material on each side of the entrance, and at the east and west sides of the elevation, carried up to a cornice at the foot of the first-floor windows. The rest of the frontage is in Portland stone. On each side of the entrance, which is 6 ft. 6 in. wide, there are fluted pilasters from which springs a carved arch, inclosing the arms of the company. Immediately above the ground-floor windows an enriched entablature is carried across the elevation. It is divided into panels, in the centre of each being richly-carved medallion figure-heads, with Cupids and festoons on each side. At the foot of the second-floor windows are the arms of the City of London, and also the arms of Lancashire, which have been adopted by the company. Each floor has a range of three three-light windows, with double columns between the first and second-floor windows, and fluted pilasters between those on the third floor. Above the third floor is a bold cornice, surmounted by dormers and finials. The whole of the ground-floor, containing an area of upwards of 54 ft. square, will be occupied as the business premises of the company, and will be richly decorated. A portion of the first floor will also be set apart as offices for the company's business, the other parts of the building being let for general commercial purposes.

The architect of the buildings is Mr. T. Chalfeld Clarke, and the contractors are Messrs. Colls & Sons. Mr. Mallcott has acted as clerk of the works. The estimated cost of the buildings is 16,000l.

#### "EVANS'S" AND THE FALSTAFF CLUB.

The conversion of Evans's, Covent Garden, into what has been for some time spoken of as the "Falstaff Club," embracing the construction of a private theatre in a part of the premises, is not likely to be carried out. The proprietor of Evans's has just placed the property in the market, which is announced as for sale or to be let, and this is stated to be owing to the promoters of the intended club being, from some cause or other, unable to carry out the undertaking. It is believed, however, that the central situation of Evans's will shortly lead to a purchaser being found, with the view of its conversion into a club.

**A Relic of Old London.**—"About sixty years ago," writes a correspondent to *Notes and Queries* in 1857, "I was travelling from the West of England, and my fellow-travellers were an octogenarian clergyman and his daughter. In speaking of the then increasing size of London, the old gentleman said . . . I have myself seen a pump reputed to be erected on the Conduit Head, and standing against the corner house of a small turning out of Lamb's Conduit-street, on the right-hand side as you go towards the Foundling, and nearly at the upper end of the street." In this same small turning, now known as Long-yard, may be seen, on the gable of the first house on the left entering from Lamb's Conduit-street, indication of a recess, now bricked up, on the lintel of which is carved the inscription, nearly obliterated by successive coats of paint and dirt, "Lamb's Conduit, the property of the City of London. This pump is erected for the benefit of the public." Unfortunately, the date cannot be deciphered. Most probably the pump was placed here in 1746, when the Conduit, built in the reign of Henry VIII., and rebuilt in 1667, was removed. The existence of this relic is not mentioned in any modern guide or handbook of Old London.

#### ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETIES.

**Lincoln Diocesan Architectural Society.**—A programme has been issued showing the proceedings to be taken at the annual meeting of this society, which will be held at Sleaford on Wednesday and Thursday, the 15th and 16th inst. The architectural features of the parish church will be described by Mr. Charles Kirk, M.A., architect. A brief opportunity will then be afforded the members and friends to view the town, the site of the castle, &c., after which, at eleven o'clock, the carriages containing members and visitors will start from the Market-place on an excursion to the following places, viz., Kirkby Laythorpe, Asgarby, Heckington and Hale, Howell, South Kyme, Anwick, Haverholme, and Ewerby, returning to Sleaford at six p.m. On the second day the carriages will start from the Market-place at ten o'clock, for the following places, viz., Quarrington, Silk Willoughby, Swarby, Annsby, Dumbleby, Newton, Walcott, Fellingham, Billingborough, Horbling, Swaton, Helpingham, and Burton Pedwardine, reaching Sleaford again at six p.m. In the evening a meeting will be held in the Corn Exchange at eight o'clock, when papers will be read "On the Dedication of the Churches of Lincolnshire as illustrating the History of the County," by Mr. Thomas Kerslake and Precentor Venables; and on "Kyme and its Tower," by Mr. C. Kirk.

**London and Middlesex Archaeological Society.**—The annual meeting of this society will be held at the Guildhall, on Wednesday, the 22nd inst., when the Lord Mayor is expected to preside. It is twenty-one years since this society held its meeting in the Guildhall, and an influential and large gathering is expected.

**Cambridge Antiquarian Society.**—The annual meeting of this society was held on the 30th ult., Professor Hughes, F.S.A., the retiring president, in the chair. The Rev. R. Burn, M.A., of Trinity College, was elected President for the ensuing year. The annual report mentioned the continuous growth of the society, which now numbers 224 members, and referred to the loss recently sustained by the deaths of Dr. Guest and of the Rev. S. Banks, M.A. The Treasurer reported that the society has a balance in hand of 262l. 10s. 8d., which is, however, fully required to meet the expense of the new editions of Dr. Raven's "Bells of Cambridgeshire," and of Professor Babington's work on "Ancient Cambridgeshire," and other books which will soon be issued to members.

#### CAREFUL CALCULATION.

SIR,—I beg to hand you a list of recent tenders, which I think may be a curiosity, even to one of your extensive experience, especially considering that quantities were supplied, and that the work was all of the simplest character.

R. A.  
For the levelling, draining, and other works required in the preparation of the Southern Sewage Farm, in the district of Ripley, near Derby, area about 6½ acres, for the Ripley Local Board. Mr. R. Argle, surveyor. Quantities supplied:—

Ballam, Colson .....	£2,112 15 3½
Beardley & Pounder, Ilkeston ....	624 14 6
Breedon & Spencer, Westington ....	401 0 0
Hawley, Ilkeston .....	458 10 0
Coupe, Ripley .....	405 0 0
Wain, Ripley (accepted) .....	360 3 6
Wern, Rodgers, & Wingad, Whit- tington (withdrawn) .....	242 19 11

#### NEW COLLEGE BUILDINGS.

**Ely.**—The dedication and opening of the new buildings of the Ely Theological College took place on the 31st ult. The college was founded by the present Bishop of Ely in 1876, 1876, and Canon Luckock was appointed the first principal. It is designed as a place of preparation for candidates for Holy Orders, and is open only to students who have graduated at one of the Universities. The permanent building was commenced in 1879 from designs by Mr. J. P. St. Aubyn, and the contract was taken by Messrs. Bardell Brothers, of Lynn. It contains chapel, lecture and dining hall, library, principal's and vice-principal's studies, and twelve sets of rooms for the students, besides the ordinary offices, &c. The style belongs to the Late Decorated period of architecture. The chapel is richly furnished, and the sanctuary has been decorated from designs by Mr. C. E. Kempe, who has also executed some stained glass for one of the windows. The east window, representing

"Christ adored by the Angels and Church-workers in all Ages," is filled with stained glass by Messrs. Heaton, Butler, & Bayne.

**Quinton.**—On the 8th inst. the ceremony of laying the foundation-stones of the proposed Bourne College, connected with the Primitive Methodist body, at Quinton, took place. The college is intended for the training of the sons of ministers of the sect and of laymen. The building, when completed, will accommodate 130 scholars; that portion of it now in course of erection will accommodate eighty. Queen Anne style of architecture has been decided upon. The walls will have brick facings, with stone and brick dressings. The contractor is Mr. E. Walton, Smethwick, and the cost of the buildings will be 3,700l. Messrs. D. Smith & Son, Bennett's-hill, Birmingham, whose designs were selected in competition, are the architects.

#### NEW PARKS.

**Wolverhampton.**—On Whit Monday the Mayor of Wolverhampton formally opened the new public park for that town. Negotiations were entered into with the Duke of Cleveland for the purchase of a portion of the Broad Meadows, situated almost in the centre of the borough,—better known, perhaps, outside Wolverhampton as the site of the old racecourse. The result was that his grace agreed to let to the Corporation, on lease, with power to purchase at the end of sixty-three years for 20,000l., a tract of fifty acres in the centre of the meadows, the annual payment to be 300l. per annum for forty-two years and 350l. for the last twenty-one years of the lease. These terms, after considerable discussion in the Council, were accepted, and out of a number of competitors Mr. R. H. Vertegans, of the Chad Valley Nurseries, Birmingham, was appointed to lay out the park, his plan being awarded the first premium of 50l. offered by the Corporation for the best design. The sheets of water cover eight acres. The lodges at the Bath-road and the Whitmore Reans main entrances are built of pressed red bricks, from the Advertiser Park Company, at Birmingham, with stone dressings from the Daley Dale quarries, Derbyshire, the style being Old English, with partially timbered gables. They contain, on the ground floor, two living-rooms (each having a window overlooking the entrance-gates), kitchen, and scullery; and upstairs there are two good rooms. Behind each lodge there is a small yard containing the necessary out-houses, and the coping of the wall enclosing the yard is broken and embattled to be in keeping with the lodge. The whole of the structural works have been carried out under the supervision and from the designs of Mr. G. Eastlake Thoms, C.E., the borough engineer. Messrs. Bradney & Co. have been the contractors for the lodges, shelters, &c.; Messrs. P. Horsman & Co. the contractors for the masonry work of the boundary fence; and Messrs. Baylis, Jones, & Baylis, have constructed the iron palisades and ornamental gates.

**Halifax.**—The new Shroggs Park, Halifax, is to be opened on Midsummer Day. It will be 24 acres in extent, and is the third public recreation ground for Halifax.

**Burnley.**—Alderman Scott, J.P., one of the ex-Mayors of Burnley, who was interred on the 2nd inst. at the cemetery, has left 10,000l. for a public park. He gave 1,600l. to the Mechanic's Institute two years ago.

#### THE VALUE OF LAND AND BUILDINGS IN THE STRAND.

LAST week a freehold house and shop on the south-side of the Strand, opposite to the Adelphi Theatre, and near the corner of Adam-street, was offered for sale at the Auction Mart, by Messrs. Debenham, Tewson, & Co. The premises, which for many years past have been occupied as a cigar divan, have a frontage of 14 ft., by a depth of 63 ft., covering a ground-area of about 882 ft. The property was sold for 9,700l., with possession, being at the rate of about 11l. per foot. The estimated rental is 400l. per annum.

**Scaffold Accident in Rome.**—By the falling of a scaffolding in Rome two men have been killed and four other persons so seriously injured that they are not expected to recover. The planks of the scaffolding are said to have been quite rotten. It is stated that the superintendent of the works has been arrested.

## PAYMENT FOR WORK.

MIDLAND LAND AND INVESTMENT CORPORATION  
(LIMITED) v. PETO.

This was an action to recover 14,000*l.*, alleged to have been paid under a mistake of fact.

It appeared that one Godbold having obtained possession of a plot of ground in Chancery-lane, entered into an agreement with the defendant by which the latter was to build upon it an extensive set of chambers for 77,000*l.*, according to certain plans and specifications already prepared. By the agreement, the defendant was not to deviate from the plans or to do extra work without the authority in writing of the architect, nor to do any extra work without the previous written consent of the plaintiff, who were about to advance money to the amount of 70 per cent. upon the contract price of the works executed for the completion of the contract, under a contemporaneous tripartite agreement between themselves, Godbold, and the defendant. The plaintiff, it was said, supposed that the original plans were being carried out, and they paid upon that footing; whereas, in fact, new plans were prepared and the buildings were erected, it was stated, for a considerably less sum than was contemplated, whereupon the plaintiff declared there had been omission and variations from the original contract, which had reduced the price of the work done, so that the defendant was entitled only to a reduced payment, and they brought this action to recover 14,000*l.* paid, as they maintained, under a mistake of fact, the mistake being that the architect's certificates had been given upon the original plans and contract price, and not upon the actual value of the work based upon the bill of quantities. The defendants contended that the contract was for a lump sum of 77,000*l.*, and that the new plans, which were, moreover, sanctioned by the plaintiff, related not to a decrease, but to an increase of work. At the trial before Mr. Justice Denman, at Warwick, the jury were discharged, and the learned Judge ultimately gave judgment for the defendant.

The plaintiffs appealed, and the case came before the Court of Appeal, before Lords Justices Bramwell, Brett, and Cotton.

Their lordships affirmed the judgment of Mr. Justice Denman, and held that no money had been paid under such mistake of fact as to entitle the plaintiffs to recover it back from the defendant.

## A CONTRACTOR'S CLAIM.

MARTIN v. THE BOARD OF WORKS FOR THE POPULAR DISTRICT.

This action was brought to recover the sum of 2,000*l.*, under the circumstances to be gathered from the opening statement on behalf of the plaintiff.

Mr. Waddy, in stating the facts of the case to the jury, said the plaintiff is a builder and contractor, carrying on business at the Grove Susan Saw Mills at Stratford, and the defendants are the Board of Works for the District of Poplar. In the year 1877 the defendants resolved to erect a fever and small-pox hospital at West Ham, and for that work the plaintiff, amongst others, tendered, and his tender was accepted by the defendants, and a contract under seal was executed by the plaintiff and the defendant on the 17th of September, 1877, by which it was agreed that the plaintiff should complete the buildings according to the plans, specifications, and detailed drawings, to be supplied by Robert Parker or other surveyor or architect for the time being, of the defendants, and with such alterations or deviations as might be directed, at the price of 12,548*l.* It was also agreed that the works should be carried on without delay, and that the plaintiff should, when, where, and as they might require scaffolding, plant, sheds, &c., until the completion of the work, and complete the work on the 20th of September, 1878, and the defendant, by the contract, agreed to pay to the plaintiff sums amounting to 80 per cent. of the value of the work done until the value of the work should amount to 6,000*l.*, and then in amounts of not less than 500*l.*, the full value of the work subsequently done. The defendants also agreed to pay the sum of 1,800*l.*, being the balance of 20 per cent. upon the sum of 6,000*l.*, or as to one moiety on the completion of the work, and the residue at the expiration of three calendar months after the defendants' surveyor should have certified that the whole of the works had been executed to his satisfaction. Mr. Waddy alleged that Mr. Parker declined to act, and Mr. R. L. Bracebridge, one of the members of the defendant Board, was appointed to act as architect and surveyor, and did so act during the erection of the building. The claim of the plaintiff arose from the fact that, although he was willing to complete and would have completed the buildings on or about the time agreed upon, Mr. Bracebridge negotiated, and refused for a long time, to often request, to supply the plaintiff with the requisite plans and detailed drawings, whereby the plaintiff was prevented from covering in and finishing a large portion of the building, and was thus put to great expense in carrying on the work, and in maintaining scaffolding, covering the work done and protecting it from the weather, and in maintaining and keeping a large quantity of plant, scaffolding, &c., for a much longer time than was reasonably required, and the plaintiff wholly failed to complete the use of the plant and scaffolding, and that owing to this neglect and delay, the building was not finished until the month of May, 1879.

Mr. Baron Pollock asked for a copy of the contract, and on referring to it said he did not find that Mr. Bracebridge was mentioned in it. How did the learned counsel get rid of the contract?

Mr. Waddy said, in answer to his lordship, that the plaintiff's claim was *dehors* the contract that Mr. Bracebridge was servant of the defendants, and for his acts they were liable.

Mr. Baron Pollock.—This is another unfortunate attempt to get rid of a contract duly sealed by the defendants as a corporation, which Mr. Parker, the architect, the surveyor, had to give certificates, and was actually judge between the parties. He did not gather that any imputation was made against Mr. Parker.

Mr. Waddy.—Yes, it is. I think Mr. Parker would have acted with fairness if he had been allowed to do so by Mr. Brace-

bridge; but the latter took the superintendence of the job, and although he did not sign the certificates, yet he at all times was instrumental in preparing them.

Mr. Baron Pollock.—You have not alleged one fact to take this case out of the ordinary law regulating contracts of this description. If Mr. Bracebridge did interfere, it was completely to his advantage, as he said, "I do not know you; I am working under Mr. Parker. He it is to whom I look for instructions in this building," and he could have ordered Mr. Bracebridge off the ground, and declined to recognise him in any way.

Mr. Waddy and his learned junior endeavored to escape by argument from the ruling of the judge, but without success.

Mr. Baron Pollock, turning to the jury, said, "Gentlemen, you have not been troubled in this case, for it is a simple question of law, and I hold the plaintiff cannot recover in this action, and you will therefore find a verdict for the defendants."

His lordship then certified for the special jury.

## PURE AIR AND RADIATING HEAT.

Sir, —Mr. Elington writes [p. 715, ante] that he would "be glad to aid in dispelling the delusion that the air of a room can be warmed by radiation." Then he says, "I have seen a good fire on a frosty night and the radiation flies off to the ice in the window and melts it, excepting above the mantelpiece, where it is longer, to his surprise, in melting. Really, the radiation of heat is a very curious phenomenon, and I must relate an incident. Last winter, noticing the frost on my window just above the mantelpiece, I asked my little daughter (aged nine years) the cause of it remaining so long. 'She supposed it was caused by the cold air from the outside rushing up between the rails and so preventing the warm air from the room getting at it.' Mr. Elington does not believe in radiation, and yet he says the heat by radiation flies off and warms the room, and also instances the fire-screen as being useless in checking the heat if the air of the room is made warm by it. Surely everybody knows a fire-screen is simply to obstruct or check the direct rays of heat from an object, and if the screen were made of non-conducting materials, as tin in the ordinary meat-screen, it would effectively intercept the rays of heat, and return them in a great measure back to the fire; but from screens made, say from wool or old cloth, the rays of heat are only directed away from the fire, and do not return to the room. I imagine no person would attempt to warm a room by radiated heat alone. That it will greatly assist in warming rooms is well known. Example: a highly-burnished and bright grate will be more effective in warming a room than a coarsely-finished black grate, simply because the heat is radiated from the bright surface, and diffused throughout the room. But in the case of the black grate, the greater part of it is checked by the metal surface, and conducted through it, and absorbed by the brickwork at the back. Again, if a sheet of bright metal were placed at an angle in the window reveal, so as to catch the rays of the sun, whether the window be open or closed, it would quickly be apparent that radiated heat can be used for partially warming a room.

ROBERT CRANE.

## THE ENGLISH LAND SYSTEM.

Sir, —I think your correspondents and others who lay the present depressed state of agriculture to our land system, although that system may not be perfect, are altogether wrong. It is quite true that thousands of acres are going out of cultivation in this country, and unless something is done for the farmer no doubt all the very poor land must follow, but it is not the being a tenant, or the having of machinery that are the cause. Thus the "compound surface condenser" not only saves the fuel, but it enables so much more cargo to be carried in the place of fuel, while the boilers last three times as long, bringing us into competition with the pick of the land in finer climates, for instance. In America there is good, bad, and indifferent land, as there is in England, but what they do they attempt to cultivate the former,—which, with their immense riches, they can afford to do,—we in this confined, over-populated country, cultivate, or endeavor to do, almost everything. A very large proportion of what we plough up a Canadian would ridicule the idea of working, for it is only made to grow anything by a regular system and large outlay in manure utterly impossible to a colonist.

Another point often urged against our system is that it prevents the improvement of the land; the fact, however, is that the average production of the corn land of this country,—which consists of, as I said before, good, bad, and indifferent,—is, I believe, very nearly twenty-four bushels to an acre, against fifteen bushels the estimated product of only the best land of the United States and Canada, showing what that system has done for Great Britain.

Your correspondent of the 7th ult.—in speaking, too, of "excessively high rents to keep up the noble landlord's luxurious establishments,"—seems not to be aware of the well-known facts, firstly, that, as a rule, the larger the estate the larger the rent; and secondly, that the owners that extract the extreme rents from their tenants; and, secondly, that on the poorer lands and smaller farms the rent is generally barely enough to pay 6 per cent. interest on what the farm houses and buildings would cost; and this is gradually causing the extinction of that class of holding, the farm buildings on large farms being comparatively small in proportion.

The prospects of agriculture in England are, I am sorry to say, seemingly unrelieved by our present Government. Rich land can take care of itself, as the landlord will simply have to reduce his rent; but what will become of land that will not carry a rent, but will not produce enough at present prices to pay for its cultivation and rates? That is what we have to consider, and not the talking of the barbarities of the land system," whatever that may mean.

I should like to hear some practical man's views on the subject.

A HAMPSHIRE MAN.

## FORMATION OF TRAMWAY.

Sir,—Perhaps some of your readers would kindly give me a few hints as to the best description of "permanent way" to lay down a steam tramway, to carry goods, as well as passengers?

## A FEW MORE WORDS ON QUANTITIES.

Sir,—Regarded as an historical account of the rise and progress of quantity surveying, the article signed "A. B. C." is most interesting and useful; the arguments, moreover, against the practice of architects taking out their own quantities seem to me unanswerable, although many more could be urged on the same side. But a quantity-surveyor may be allowed to demur to the summary fashion in which the writer classes quantity-surveyors as a kind of necessary evil which the conditions of modern business unhappily compel the public to tolerate for the present. One of our chief London surveyors remarked at the recent Conference that, during his experience, he had observed that his profession had undergone gradual but considerable change, and I venture to say that in no respect is this more true than as regards the status of its members. The point of view of "A. B. C." is appropriate rather to the state of things of five-and-twenty years ago than to the circumstances of the present time. Formerly the quantity-taker was regarded as a sort of builder's clerk, whose sympathies were all with the contractor, of whom he was only too probably a furtive ally, and the architect found it necessary constantly to guard against the danger of collusion between him and the contractor's estimating. There was even a trace of this notion in the speech of Professor Kerr at the Conference. How different now is the standing of the men who pursue the scientific branch of architecture called quantity-surveying we all know, and the younger men who have adopted this calling owe a deep debt of gratitude to the fathers of the profession who have raised it to its present position. There is no more honourable or more trusted set of men engaged in any of the multifarious callings connected with building. Intimate acquaintance with the details of construction, precision, accuracy, method, independence of judgment, character, are some of the essential qualifications of a good surveyor, and no one will deny that the best men possess all these. There are probably no other men who are so constantly called on to look at building questions from both the architect's and the builder's point of view, or are in a better way for acquiring an impartial habit of mind. The fact that in building disputes the professional umpire agreed on is now commonly a surveyor sufficiently attests the accuracy of these remarks.

To the statement that "if an expeditious and inexpensive manner of multiplying copies of the drawings and specifications could be devised, and each builder were to make his own estimate, the quantity-surveyor would be unnecessary," I must also take exception. The increasing practice of builders when asked to tender without quantities supplied is either to refuse to tender at all, or to send the drawings to a surveyor, and to tender on his quantities, and (as architects decline to furnish builders with the names of the other competitors) under the system proposed, in a large competition, probably several surveyors would be employed, instead of one. The successful builder would be obliged to include in his contract price, besides his expenses and profit on the particular work, a sum which would recompense him for his expenses on other works for which he had competed unsuccessfully, and the result would be probably an increased employment of surveyors, and certainly a distinct rise in the cost of building. With regard to the "personal equation" to which your contributor refers, this would have more influence under his system, where each competing builder would measure and estimate from the drawings for himself than where all accepted the quantities of one trained surveyor. Other things being equal, the man who tended to a minus quantity would measure short, and would get the work. As time went on he would discover his errors, and the difficulties that usually occur when a contractor has taken work at a price that will not pay him would ensue.

There is a point which "A. B. C." entirely passes over, and of which little was said at the Conference, viz., the modern custom of depositing with the architect or his surveyor a set of priced bills of quantities for the purpose of valuing variations. This, however, has always seemed to me one of the most important uses of quantities. The trouble and disputing which it has saved are simply incalculable. Not only is an almost perfect schedule of prices thus at once obtained, but the contractor's interest

ceases to lie in the direction of variations, which in the absence of high rates of payment are not profitable. To this it is due that the constant striving to procure departures from the contract with which we all used to be so familiar has become a thing of the past. And the convenience of this practice furnishes another reason why architects will be loth to abandon the custom of appointing a surveyor to supply quantities on their behalf.

F. H. A. HARCASCADE.

#### QUESTIONS IN COLOUR.

SIR,—It is almost needful to remind your readers that this correspondence began with an expression of regret that the study of colour was not more popular. I doubt whether any subject can be made more popular by being overlaid with the phraseology of scientists, or by the inaccurate conduct of experiments.

If Mr. Standage cannot see that complementary colours placed in juxtaposition "heighten" each other, it must be that his eye is not sensitive to fine gradations of colour; for it is a practical fact, known and acted upon by the painters of all ages.

Your other correspondent, "W. C. T.," says that I commit a solecism, in my last letter, when I "speak of the mixing of colours." "Colours cannot be mixed; we cannot mix sensations." Well, I am not sure about sensations,—the experience of the palate leads me to think that "mixed sensations" are not impossible. But, as to "the mixing of colours" I did not use the phrase.

I, however, commend to "W. C. T.'s" attention the following passages, taken almost at hazard from one of Mr. Spottiswoode's chapters on "Polarised Light."—"The results of combining two or more colours of the spectrum have been studied by Helmholtz, Clerk Maxwell, Lord Rayleigh, and others." Again, "The combinations considered in former experiments are those of simple colours; the present combinations are those of mixed tints," &c.

Can "W. C. T." put those two statements into clearer form? Until he can, I may be excused for preferring the simple language of the President of the Royal Society to the possibly more scientific and less intelligible "nomenclature" which your correspondent advocates.

J. D. CRACE.

#### SOCRATES ON TECHNICAL EDUCATION FROM THE PHÆDRUS OF PLATO.

ACCORDING to the traditions of the Egyptians, the god Theuth first discovered number and the art of reckoning, geometry and astronomy, the games of chess and of hazard, and likewise letters. But Thamus was at that time king of all Egypt, which the Greeks called Egyptian Thebes; but the god himself they denominated Ammon. Theuth, therefore, departing to Thamus, showed him his arts, and told him that he ought to distribute them amongst the other Egyptians. But Thamus asked him concerning the utility of each; and upon his informing him, he approved what appeared to him to be well said, but blamed that which had a contrary aspect. Theuth is reported to have fully unfolded to Thamus many particulars respecting each art, which it would be too prolix to mention. But when they came to discourse upon letters, "this discipline, O king," said Theuth, "will render the Egyptians wiser, and increase their powers of memory, for this invention ministers to memory and wisdom." To this Thamus replied, "O most artificial Theuth, one person is more adapted to artificial operations, but another to judging what detriment or advantage will arise from these productions of art; and now you, who are the father of letters, through the benevolence of your disposition, have affirmed just the contrary of what letters are able to effect. For these, offering a substitute for memory in the soul of the learner, and leading him to trust to the external and foreign marks of writing, will prevent him from fully exercising the native and internal powers of his mind, so that letters do not minister to the powers of the memory, but the very reverse. You will likewise, by these, deliver to your disciples an opinion of wisdom and not truth. For in consequence of there being many readers without the instruction of a master, the multitude will appear to be knowing in many things, of which they are, at the same time, ignorant, and will become troublesome associates in consequence

of possessing an opinion of wisdom instead of wisdom itself. Hence, he who thinks to commit an art to writing, or to receive it, when delivered by this means, so that something clear and firm may result from the letters, is ended with great simplicity, and is truly a believer in the prophecy of Ammon, who is of opinion that something more is contained in the writing than what the symbols themselves inform the reader. For that which is committed to writing is similar to a picture. For the figures in a picture seem to project as if they were alive; but if you ask them any question, they are silent in a perfectly venerable manner. Just so with respect to written discourses; you would think that they spoke as if they possessed some portion of wisdom. But if, desirous to be instructed, you interrogate them about anything which they assert, they signify one thing only, and this always the same. And every discourse, when it is once written, is everywhere similarly rolled among the public, even among those by whom it ought not to be heard, and is, in itself, perfectly ignorant whom it should address and whom not, and when it is either reviled or critically examined, it requires the assistance of its parent; for of itself it can neither resist its adversary nor defend itself. There is, however, another kind of discourse much better and more powerful than this. I speak of the living and animated discourse of one endowed with knowledge, which is able to defend itself, and which knows to whom it ought to speak, and before whom it ought to be silent, and of which written discourse may justly be called an imperfect image.

But shall we say that the man who possesses the science of things just, beautiful, and good, is ended with less intellect than a hand-maiden, with respect to the seeds which he sows? He will not therefore with anxious and hasty diligence write them in black water, sewing them by this means with his pen; since it is by such means impossible to assist them with speech and sufficiently demonstrate their truth. In my opinion, a fuller harvest will result from living discourse, when genius, employing the dialectic art, shall plant and sow in the minds of its auditors. Living discourse can help itself and reply to all interrogatories. Discourse of this kind is most prolific, it abounds with seed, and the sower is blessed in as high a degree as is possible to man. But it should be recollected that no one can acquire perfection in this art either with respect to teaching or persuading, till he is thoroughly acquainted with the subject on which he proposes to discourse, till he is able to define the whole, and to divide it rightly, neither speaking haphazard, nor descending to rhodomontade."

METER.

#### ENGLISH JOINERS.

SIR,—In your issue of the 14th ult., you say Mr. Sandell has 25,000 doors always on stock, of Swedish manufacture, and I suppose other merchants of London have their thousands, too, on hand. Is not that a poor look-out for young men or our apprentice boys who are striving to learn the trade of carpenter and joiner? And it must stagger the parent who is about to give 30*l.* or 40*l.* for his boy to learn a good trade which he always took so much delight in himself. The parent, if he has any discernment in him, must see that the joiner will soon be a thing of the past, and men will see that the day will come when England will look round for her joiners, and ask, "Where are they?" What say our builders to this? Are they in such a hurry to get rich that they neglect the tender shouts of our trade? Is the boy to be thought of no more? Is the joiner to be ruined? If our builders were to think for a moment, they would see that in our own joiners' shops we can hold our own, with any Swedish firm if we are only rightly encouraged.

BRACE AND BITS.

#### PLAGUE OF FLEAS.

SIR,—I am the surveyor to an estate on which there are a large number of small tenements. Two or three of these have become unfortunately so infested by fleas as to be all but uninhabitable.

Can any of your practical readers tell me of a sure way to get rid of this plague? If so, they will much oblige, S. R. T.

**The Works of John Norden.**—The original works of John Norden, the Elizabethan surveyor, are of so high a degree of rarity, that the recent appearance of three of his maps, dated 1595,—those of Essex, Hampshire, and Middlesex,—deserves a record. They were sold at Messrs. Sotheby's last week for 23*l.* The map of Middlesex, on a much larger scale than the well-known engraving, is an extremely interesting specimen of the work of one who may fairly be considered our earliest accurate topographical draughtsman.—*Athenæum*.

#### PROVINCIAL NEWS.

**Durham.**—The Post-office Buildings Company (Limited) are at present erecting a block of buildings in the rear of the new post-office, Sadler-street, Durham. The work is being carried out under the supervision of Mr. C. Hodgson Fowler, architect, and the contract is held by Messrs. Geo. Gradon & Son, and amounts to 2,800*l.* The sub-contractors are,—Mr. W. Wardrop, mason; Mr. Jas. Laidler, plumber and ironfounder; Mr. W. Blakely, slater; Mr. T. Nesbitt, plasterer; and Mr. G. Smethwaite, painter and glazier. The buildings consist of two blocks of warehouses facing one another, with an open yard between, and at the end a caretaker's cottage of four rooms, with yard and outbuildings.

**Bishop Auckland.**—At the last meeting of the Burial Board, the author of the selected design for the new cemetery,—Mr. Pritchett, of Darlington,—attended, and received instructions to prepare the drawings and specifications necessary for obtaining tenders.

**Darlington.**—The appointment of surveyor to the Duke of Cleveland's Building Estate having become vacant, Mr. Pritchett, of this town, has been selected for the post.

**Liverpool.**—The Seacombe Hotel, which has been erected by a company on a site close to the ferry approaches, was opened on the 28th ult. It has its main frontage towards the Mersey (a promenade of 12 yards wide only intervening between the hotel and the river). There are thirty-six bedrooms, besides private and public sitting-rooms, coffee and dining rooms, drawing-room, commercial room, large banquet-hall or assembly-room (73 ft. by 25 ft. by 22 ft. high), smoke-room, billiard-rooms (public for three tables, private for one table), spacious kitchens, and usual offices. The contractors for its erection were the Messrs. Monk & Newell, of Bootle, who were also the contractors for the new Seacombe approaches, whilst the architect was Mr. C. Grayson, of Liverpool. The whole of the furnishing and decorations has been carried out under the supervision of Mr. G. Bradbury.

**Blacksteads (Manchester).**—The new premises which have been erected in Newchurch-road, Blacksteads, as the future habitation of the Blacksteads Constitutional Association, and which are to be known as the Beaconfield Club, were opened on the 28th ult. On the first floor is the reading-room, 29 ft. long by 18 ft., approached by a staircase, 13 ft. 6 in. by 10 ft., with pitch-pine newels and handrails, French polished. On this floor lavatory accommodation is provided, also a kitchen for the steward or caretaker, with cooking-range and other conveniences. The whole of the top floor has been devoted to a billiard-room, 33 ft. by 29 ft. Nearly the whole of the ground and basement floors will be let off for shop or other business purposes. The three fronts are of local stone, and the principal feature in the main elevation is a large oriel window, two stories in height, partly filled with stained glass. The building is in the Domestic Gothic style, half-timbered work being sparingly introduced into the main gable. The architect is Mr. Lawrence Booth, of Manchester, under whose supervision the whole of the works have been carried out. The contractors have been:—For the stonework, Mr. Henry Coupe, of Waterfoot; carpenter and joiner's work, Mr. John Plane, of Bacup; plumbing and glazing, Mr. John Mensworth; plastering and painting, Mr. James Pilling; and for the slating, Mr. Henry Whitehead.

#### STAINED GLASS.

**Dinnington.**—A five-light Munich window, by Messrs. Mayer & Co., representing the "Crucifixion" in the centre, with the "Nativity" and "Christ appearing to Mary Magdalen" on either side, has recently been executed in Dinnington Parish Church, to the memory of the late Mr. John Carver Athorpe, of Dinnington Hall.

**Belgrave.**—A second Munich window, representing St. Peter and St. Andrew, has lately been erected in the parish church of Belgrave, Leicester, by Messrs. Mayer & Co.

**Chelmorton.**—A stained-glass east window, executed by Messrs. Jones & Willis, of Birmingham and London (subject, the "Ascension of our Blessed Lord"), and erected by Mr. Thos. Buxton, of Chelmorton, to the glory of God and in memory of his son Richard, has been recently unveiled in Chelmorton Church. The church, an early one, has been recently restored at a cost of about 2,000*l.*

**Stretford.**—A stained-glass window, by Meyer & Co., representing the "Good and Faithful Servant," has just been erected in the parish church of Stretford, to the memory of J. Hampson, fifty-four years clerk of the church.

#### CHURCH-BUILDING NEWS.

**Plymouth.**—When St. Jude's Church, Tothill-lane, was built a few years ago, from the designs of Mr. James Hine, architect, of Plymouth, funds were so low that the execution of the carved work had to be deferred. Now, through the munificence of the Rev. Thomas Bewes, of Beaumont House, the work has been finished. The decorative sculpture just completed has been carried out by the staff of Mr. Harry Hems, of Exeter. The work within and without the chancel is quite distinctive. Acting under the directions of Mr. Hine, Mr. Hems has given to the capitals in the chancel a character strictly their own. The stones are carved into representations of angels,—some bearing scrolls, some singing, others with musical instruments, forming, as it were, a celestial choir. Between the figures the conventional forms of the lily, rose, passion-flower, &c., are introduced. The large capitals that support the arcades on either side of the nave are well carved. They take the cushion form, and the well-known work at old Southwell Minster has formed the model for the carver in these capitals. Into them the oak, ivy, maple, thorn, &c., are introduced in conventionalised rendering. The roof corbels in the chancel and transepts are boldly carved, and all the label terminations to the windows, inside and outside the building, are stopped by sculptured heads of saints, virgins, and martyrs. When the spire, now building, is finished, St. Jude's Church, Tothill-lane, will be one of the most complete churches in the three towns.

**Arleborough (Northamptonshire).**—On the 28th of April the fine old church of St. Peter was re-opened by the Very Rev. Lord Alwyne Compton, dean of Worcester. The church, which is one of great interest and beauty, has been restored, and "The Story of the Restoration" has been told by the rector, the Rev. Thos. Grabham, in a pamphlet of some seventeen pages. The whole of the roofs are new; and the whole of the seating, which is of oak, is understood to be a careful reproduction of the old. In the chancel, the old stalls, with misereres, have been repaired and refixed. The body of the church has been restored by the parishioners at a cost of 2,500*l.*, and the chancel by the Marquis of Bristol at a cost of 500*l.* The architect was Mr. Paacock, of London; the builders were Messrs. Henson, of Finedon, Northamptonshire.

**Broughton.**—The little church of St. Lawrence, Broughton, near Newport-Pagnell, has been re-opened, after restoration by Mr. William White, F.S.A. Seventeen years had elapsed since the architect was first called in and the good work initiated by the rector, the Rev. J. W. Irving, by whose perseverance it has been at length completed, with the assistance of Mrs. Higgins, of Turvey House, Beds. Great interest is given to the church by a number of old mural paintings. These were opened out many years ago by the present rector. There were indications of several successive layers of subject paintings in distemper over them. They are of late Mediæval date, quaint and rude, and of treatment almost unique. In them are represented St. George with the Dragon, and a diminutive princess; St. Helena finding the Cross; and a Pietà.

#### SCHOOL BUILDING NEWS.

**Sunderland.**—On the 19th ult. the memorial-stone of a new Sunday school, intended as an adjunct to a Congregational Church yet to be built, was laid on a site on the Grange estate, in Skooton-road. The architect of the school is Mr. J. P. Pritokets, of Darlington, and it is stated that the plan possesses the following advantages:—"1. The scholars, both at the opening and closing of the school, face the superintendent, without any confusion or moving of a single scholar from his or her place. 2. The teacher has every scholar in front of him, and, without moving his head, has his eye upon them. 3. The cost is nearly 50 per cent. below the cost of the most approved Sunday schools yet built." In the plan the superintendent's desk is the axis of a room which is formed by eight sides of a "dodecagon" or twelve-sided figure, all the seats standing at tangents to the semi-diameter, thus directly facing him all

round the figure. The outer part of this figure is divided into eight class-rooms, shut off from the centre part by revolving wood shutters lined with indiarubber to exclude sound, and the class-rooms are divided from each other by similar shutters, as the room is also to be used for tea meetings. By this arrangement, when the shutters dividing the class-rooms from the centre part are drawn up, the superintendent commands a direct view of the face of every child, and when the shutters are lowered, which can be done instantaneously, there are eight separate class-rooms in the outer part, leaving a central area for five classes of the more juvenile scholars.

**Coldhurst (Oldham).**—The foundation-stone of a new infants' school has been laid at the junction of Stanfield-street and Ernest-street, Coldhurst, Oldham (in connexion with Holy Trinity Church, Coldhurst). The schools are designed in the Gothic style, and are to be built of red bricks with stone dressings. The roof will be open-timbered, and covered with blue slates. The inside walls are to be finished with pressed bricks, with a dado of white glazed bricks, surmounted with an ornamented glazed string-course. There will be a large school-room, 60 ft. by 24 ft.; two class-rooms, 20 ft. by 20 ft.; cloak-room and lavatory, 18 ft. by 11 ft. 9 in.; main entrance, 18 ft. by 6 ft., leading directly into each class-room and large school-room. The whole of the building will be heated with hot water, and the cost will be about 1,400*l.* Mr. Alexander Banks, Oldham, is the architect; and Mr. Whitworth Whittaker, of Oldham, is the contractor.

**Darwen.**—The new school for St. James's parish will be in the Gothic style, and will have two lofty turrets on the main ridge, each finished with wrought-iron finial. Playgrounds are provided at each end of the building for boys and girls respectively,—part of each playground being covered in for the use of scholars in wet weather. The site measures 260 ft. by 48 ft., and the school will occupy the centre, and will comprise mixed school, 60 ft. by 42 ft.; infants' room, 36 ft. by 28 ft. (with cellar under); two class-rooms, each 16 ft. by 11 ft.; one, 22 ft. by 20 ft. 6 in.; and another, 22 ft. by 14 ft. 8 in.; besides cloak-rooms and porches. Cloak-rooms are placed in close proximity to both playgrounds and main entrances. The works are being carried out by local contractors, from the plans and under the supervision of Mr. W. Ferry, architect.

#### Miscellaneous.

**The Artisans' Dwellings Act.**—At the meeting of the Metropolitan Board of Works on the 3rd inst., the Works Committee submitted a letter from the Home Office, stating, in reply to applications by the Board for permission to pull down houses in the areas of the St. George-the-Martyr, Southwark, Whitechapel, and Limehouse, and High-street, Islington, schemes, that the Secretary of State deemed it advisable, pending the inquiry about to be instituted by a select committee, not to sanction the demolition of any more houses. The reply ordered to be transmitted to the Home Secretary stated that the Board felt it to be its duty to make another application to the Secretary of State for his sanction to the demolition of the houses. A large number of the houses, comprising, in some cases, entire courts, were altogether and permanently closed, the houses being not only in such a bad sanitary condition as to be uninhabitable, but the very structures being for the most part in a dangerous state, and some of them little better than ruins. The other houses which were still occupied were mostly in such a condition that the Board could not take the responsibility of allowing them to remain standing and inhabited.

**Art Students' Home.**—The Princess Mary Adelaide (Duchess of Teck) on the 3rd inst. visited the Art Students' Home, Brunswick-square, of which she is patroness. Her Royal Highness, who was received at the Home by the President (the Baroness Burdett-Coutts), the ladies of the committee, and others, expressed satisfaction at the completeness of the arrangements.

**Surveyorship, Gravesend.**—At a meeting of the General Purposes Committee of the Corporation of Gravesend, held at the Town-hall on the 3rd inst., Mr. Edward Rhodes, of Redford, Yorkshire, was appointed surveyor for the borough, in the room of Mr. Buckham, resigned.

#### British Archaeological Association.

The closing meeting of the session was held on the 1st inst., the Earl Nelson in the chair. Mr. G. B. Wright, F.S.A., detailed the progress of arrangements for the Congress at Great Malvern, which will be held in August. Visits will be paid to many places of interest, and, by the invitation of the Mayor and Corporation, two days will be spent at Worcester. Mr. R. Blair described further discoveries at the Roman station, South Shields. Mr. Loftus Brook exhibited a great number of Greek and Asiatic penates, in illustration of the custom still prevalent of destroying the heads when discovered to preserve the finders, as they suppose, from the Evil Eye. The Rev. T. M. Mayhew proceeded to describe a fine collection of glass vessels illustrative of the manufacture of that material from comparatively recent times backwards to a remote period. Mr. Thomas Morgan, F.S.A., called attention to the occurrence of glass mosaics, even in England, and referred as an example to some of the pavements at Brading. A paper was read by Mr. Cumming, on the representation of mermaids in various Middle-age works, and a drawing of a perfect mermaid from a stained-glass window formerly in Great Yarmouth Church was exhibited. Mr. E. Walford reported that the demolition of the old west front of St. Alban's Abbey, under the plea of its restoration, had actually commenced.

**Hospitals for the Poor.**—The series of drawing-room lectures given under the auspices of the National Health Society at the residence of Mr. Matthews, Hertford-street, Mayfair, was concluded on the 27th ult. by a lecture by Mr. H. C. Burdett, on "Hospitals Old and New; Hospital and Home Nursing." The lecturer contrasted the present provision of hospitals for the poor chargeable to the rates with the provision which existed before the passing of Mr. Gathorne Hardy's Act of 1867. He pointed out the great advance which had been made as to the nursing of the Poor-law sick, for in place of the sick poor being intrusted to the care of irresponsible pauper nurses and the sick of all classes mixed together, there were trained nurses in attendance upon the sick poor, and the sick were now properly classified. Mr. Burdett insisted upon the necessity for training nurses, and he urged that when hospital patients could pay they should be made to pay.

**The Prince Imperial Memorial.**—The memorial to Prince Louis Napoleon, which has been sculptured by Mr. J. E. Boehm, and which arrived a few days ago at Windsor, has now been fired in the Bray Chapel, in St. George's Chapel. The site on which the memorial has been placed was chosen by the Queen, and to make room for it an ancient font has been removed. The monument bears inscriptions at the base. Upon a tablet there is the following extract from the Prince's will:—"Je mourrai avec un sentiment de profonde gratitude pour Sa Majesté la Reine d'Angleterre, pour toute la famille royale, et pour le pays où j'ai reçu pendant huit ans une si cordiale hospitalité. Testament du Prince Impérial, 26 Février, 1879." The centre tablet at the right of the base contains the prayer written by the Prince, which was found after his death.

**Artificial Seasoning of Timber.**—Mr. C. René, pianoforte manufacturer, of Stettin, Germany, as reported in *Engineering*, has devised a plan by which he utilizes the property of oxygen, particularly of that oxidized by the electric current, to artificially season the timber used for the sounding-boards of musical instruments. The first impulse to experiments being carried out in this direction was given by the well-known fact that wood, which has been seasoned for years, is much more suitable for the manufacture of musical instruments than if used soon after it is thoroughly dried only. Mr. René claims that instruments made of wood which has been treated by his oxygen process possess a remarkably fine tone, which not only does not decrease with age, but, as far as experience teaches, improves with age as does the tone of some famous old violins by Italian masters.

**The South Esk Viaduct.**—The viaduct across the South Esk, in connexion with the Arbroath and Montrose Railway, having been condemned by Colonel Yolland, of the Board of Trade, a new bridge, from plans by Mr. Galbraith, C.E., London, is to be erected. The tender of Messrs. W. Arrol & Sons, Glasgow, for the erection of the new bridge, has been accepted, and a commencement will be made in the course of a week or two.

**What is an Engraving?**—Mr. Collier, a Lancashire county court judge, has just been called upon to adjudicate on the question, What is an engraving? Mr. G. F. Sargent, artist, sued Mr. B. S. Braddy, broker, of Liverpool, for seven guineas, the price of a proof copy of the picture, "The Liverpool Flags." Mr. Sargent visited Liverpool in 1878 to paint a representative picture of commercial celebrities of Liverpool, and a number of gentlemen had their portraits taken for the purpose of being introduced in the picture. The defendant was one, and he signed a contract for a proof copy. The picture had been delivered to the defendant, who objected to pay on account of the way in which it had been produced, namely, by a cheaper process than ordinary engraving, and known as photo-gravure. It was stated in the printed prospectus of the Liverpool picture that the reproduction for the subscribers would be by "Goupi's engraving process." Mr. Sargent gave evidence of these facts, and said he should speak of the reproduction by the Goupi process as "an engraving." Mr. Edward Grindley, Liverpool agent of M. Goupi, said the picture came fairly within the description of a copy or proof. He recommended the adoption of Goupi's process as the best for a picture containing a large number of portraits, because it reproduced the portraits more accurately. The defence was that the article delivered was not an engraving as contracted for. The judge said the contract was merely for a copy; but, even if the word "engraving" were used, the evidence was that what the defendant received was an engraving by a peculiar process. The contract had been satisfied. Judgment was given for the amount claimed.

**Lower Thames Valley Sewerage.**—At a special meeting of the West Kent Main Sewerage Board, held on the 1st inst., the whole Board in committee recommended the amending of the resolution of the 13th of April last, and that the secretary be directed to inform the Local Government Board that, in deference to their wishes, this Board will be prepared to adhere to their offer to admit the sewage of the Lower Thames Valley District into the West Kent main sewers, upon payment of a capital sum of 100,000*l.*, but subject to the offer being definitely accepted before the 1st of July next, and to the Lower Thames Valley Main Sewerage Board becoming a constituent authority, within the meaning of the "West Kent Main Sewerage Act, 1875," and the Acts amending the same, upon the terms of contributing to the expenditure and establishment charges of the Board (exclusive of loans for construction of existing main sewers) according to the rateable value of their district. On the suggestion of Mr. Rhodes, the consideration of the matter was adjourned to a special meeting, to be held on July 15th.

**Pictures at Cambridge.**—The Fitzwilliam Museum Syndicate, in their report, just issued, state that since their last report they have caused the entire collection of pictures to be rehanged, with a view to their better arrangement and exhibition. The collection of pictures has been enriched during the past year by two donations, viz., a "Madonna and Child," by Pinturicchio, presented by Mr. S. Sanders, M.A., of Trinity College; and "Jacob's Dream," by Professor Legros, presented by the artist. The Museum was visited by 53,684 persons during the year ending April 30th, 1881. Permission was given during the same period to 65 persons to copy in the picture-gallery, to eight in the sculpture-gallery, and to four in the library. Professor Colvin and Dr. Waldstein have made donations to the sculpture-room. Additions have also been made to the collection by purchase.

**The New Organ** erected at Whitefield's Tabernacle, Tottenham-court-road, was opened on Thursday, May 26th, by Mr. Rose, the organist of St. Pancras Church. It has been erected at a cost of several hundred pounds, by Messrs. Bishop & Son. The case, of oak, is from designs by Mr. Alfred Burr, architect. The pipes are of spotted metal. The mechanism and wooden pipes are varnished, to protect them from the damp and atmospheric variations. The pipes number 1,066.

**The Building Trade in the City.**—We understand that the building trade in the City is at present in a somewhat depressed condition, very few new works of importance being in progress. This is doubtless the result of over-building during the last two or three years, many warehouses and shops recently erected remaining without tenants.—*City Press.*

**Artificial Indigo.**—An interesting discourse was recently given at the Royal Institution by Professor Roscoe, F.R.S., on "Indigo and its Artificial Production." The Professor reminded the members of the Institution that eleven years ago he had laid before them an account of a discovery in synthetic chemistry of high importance, that of the artificial production of alizarine,—the colouring substance of madder. That was the first time the colouring substance of a plant had been artificially obtained from mineral products. He had now, he said, to give an account of a second striking case of synthetic chemistry in a similar direction,—the artificial production of indigo. It was another proof of the fact that the study of the most intricate problems of organic chemistry and those which appear to many to be furthest removed from any practical application are in reality capable of yielding results having an absolute value measured by hundreds of thousands of pounds. The value of indigo imported into this country during 1879 amounted to close on two millions sterling, so that if artificial indigo can be produced at a price to compete with natural indigo, there is a wide field open to its manufacturers. The artificial production of indigo may even now be said to be within measurable distance for commercial success, for the ortho-nitro-phenyl-propionic acid (called for short propionic acid), the colourless substance which on treatment with a reducing agent yields indigo-blue, is already in the hands of the Manchester calico printers, and is furnished by the Baden company for alkali and aniline colours at the price of 6*s.* per pound for a paste containing 25 per cent. of the dry acid.

**The Metropolitan District Railway Bill.**—A select committee of the House of Lords have given their decision with respect to the above Bill, which proposes to extend the line from Ealing to Uxbridge. The Great Western Company opposed, on the ground that the line ran almost parallel with theirs; but, on the other hand, it was alleged that a new district was opened out. The committee declared the preamble not proved. The question of ventilating the existing tunnels on the line was then discussed. It is stated to be intended to convey the smoke through a subway into the river (?) near Blackfriars Bridge and Queen Victoria-street. The committee decided to allow ventilation, subject to full powers being given to an arbitrator appointed by the Board of Trade as to the best mode of carrying out the ventilation. In response to an appeal made on behalf of the Metropolitan District Railway, leave has been granted by the select committee to allow the company to withdraw from their Bill those clauses which recently passed the House of Commons for the erection of a larger and more permanent station at Charing-cross.

**Market Harborough.**—On the 10th ult. Major Tulloch, R.E., held an inquiry at the Corn Exchange, Market Harborough, upon an application of the Local Board to borrow 16,000*l.* for works of main sewerage and sewage disposal. The plans, sections, &c., prepared by Mr. E. G. Mawbey, the engineer for the works, were submitted to the inspector, who, after taking the evidence of Mr. Mawbey and of Mr. J. B. Everard, of Leicester, the consulting engineer, inspected the land proposed to be taken for the disposal area. The system to be adopted is intermittent land filtration. From what transpired there is no doubt that the scheme met the inspector's approval, and that permission to raise the required loan will be granted. The district has been exposed to most disastrous floods, which, according to the report of the Medical Officer of Health, have seriously affected the health of the inhabitants, and it was explained to the inspector that it was proposed to deal with floods and storm-water in a separate scheme, which had also been prepared by Mr. Mawbey. The cost of these additional works was stated to be 4,500*l.*

**The Newcastle-on-Tyne Church Congress.**—Preparations have already been commenced for the Exhibition of Ecclesiastical Art that has of late years proved so interesting an adjunct to the Church Congress. It is to be opened on the 3rd and closed on the 8th of October, and many of the leading manufacturers have already decided to be represented. The loan department, which is always an important feature, will be an unusually large one, consisting of ancient church plate, Mediæval silver-smith's work, embroidery, and similar objects, some well-known collectors having promised to contribute.

**Institution of Civil Engineers.**—During the session 1880-81, there have been elected forty-seven members, 185 associate-members (of whom fifty-four were previously students), and seven associates; besides which one member and two associates have been restored to the register. On the other hand, by deaths, resignations, and erasures the Institution has lost thirteen members, eight associate-members, and nine associates. The net gain has been sixty-seven members and 148 associate-members, while there has been a decrease of three associates. In the same period the council have admitted 178 students; but as fifty-four have been elected associate-members, as previously stated, and the deductions from various causes have amounted to twenty-six, the effective increase in this class has only been ninety-nine. The Institution now consists of 1,276 members, 1,435 associate-members, 565 associates, eighteen honorary members, and 712 students,—together 4,006. Twenty-five years ago the total of all classes was under 800. On the evening of the 3rd inst. Mr. Abernethy, President of the Institution, and Mrs. Abernethy, received a large company,—over 2,000 in number,—in the South Kensington Museum, the occasion being the fifty-third anniversary of the incorporation of the Institution. The second division of the Architectural Court had been arranged as a reception-room, a winding avenue being formed for the visitors to move through by placing lines of brightly-flowering plants and lines of tall trees ferns between the various objects exhibited in the court. The several picture-galleries were lighted up, and during the evening a selection of dance and operatic music was performed by Kalozdy's Hungarian string band in the Italian Court.

**Proposed Stephenson College.**—At a meeting of the committee appointed by the Town Council of Newcastle for the purpose of considering the desirability of celebrating the centenary of the birth of George Stephenson, the Mayor of Newcastle occupying the chair, a resolution was unanimously passed, "That this meeting is of opinion that there is no better way of doing honour to the name of Stephenson, and to perpetuate his memory in this district, than by erecting a building in Newcastle for the use of the College of Physical Science, to be called the Stephenson College." The College of Physical Science, which was established and endowed ten years ago in Newcastle by the combined efforts of the inhabitants of that town and the University of Durham, is seriously cramped in its efforts by want of proper accommodation. It is estimated that a sum of 20,000*l.* at least will be required for the purpose of the college buildings. Towards this sum 1,000*l.* have been promised by Sir William G. Armstrong, C.B., and further sums amounting to 2,000*l.* by a few other friends.

**Society of Arts Conversations.**—On the evening of the 2nd inst. the Society for the Encouragement of Arts, Manufactures, and Commerce gave a largely-attended and successful conversation at the South Kensington Museum. From about nine o'clock most of the courts and corridors in this spacious building were thronged with people, who divided their attention pretty equally between the special exhibits of the society and the various objects of interest always to be found at this Museum. The reception was held in the Architectural Court by Mr. F. J. Bramwell, F.R.S., the chairman, and other members of the council. During the evening various entertainments were given in different parts of the building. The galleries containing the Raffaele cartoons, the Sheepshanks collection, the William Smith collection of water-colour drawings, the Dyce and Forster pictures, the "Chantrey Bequest," and other well-known pictures, were visited by large numbers during the evening.

**Fire at a Timber-yard.**—On the evening of the 3rd inst. what proved to be a very serious fire broke out in the timber-yard of Mr. J. Burton, 196, Old-street, St. Luke's. The timber-yard seems to have been completely surrounded by buildings, several of which, including the St. Luke's parochial schools, fell a prey to the fierceness of the flames. Captain Shaw's official report of the fire contains a long list of properties destroyed or seriously damaged.

**Paving-bricks for Brighton.**—At a meeting of the Brighton Town Council, on the 1st inst., the Works Committee reported that they had resolved upon purchasing 300,000 paving-bricks, at prices ranging from 3*l.* 7*s.* 6*d.* to 3*l.* 13*s.* 6*d.* per thousand.

**Masters and Men.**—The Glasgow lath-splitters have been out on strike for an advance of 1½d. per hour. Some of the employers have conceded the demand.—On Tuesday night a mass meeting of Glasgow joiners was held in the Albion Hall, Glasgow, to hear replies from the employers in answer to their request for an advance on their present wages of a halfpenny per hour. The present rate of wages is 6½d. per hour. Mr. W. Paterson presided. The reports of the deputations having been given in, it was found that eighty-four employers, representing three-fourths of the whole number in the city, had promised to give the advance; ten had refused, and a number had not replied. It was unanimously agreed that, in view of the number of favourable replies, the men in the shops from which unfavourable answers had been received should not resume work on Wednesday morning.—The Greenock house joiners have agreed to accept the masters' offer of ½d. per hour advance, and a threatened strike has thus been averted.

**New Church of St. Matthew, Bayswater.**—On Saturday last the foundation-stone of this new church was laid by Mrs. Allcroft, the wife of the patron of the living. The building is of stone, after the designs of Mr. John Johnson, and the builders are Messrs. Dove Brothers. The style of architecture is Early English. The nave will be 100 ft. long and 49 ft. broad, with a range of twenty clear-story windows, ten on each side. The entire length of the church will be 125 ft., and the breadth, with nave and aisles, 70 ft., and, with the transepts, 90 ft., accommodating about 1,500 persons. The height of the tower and spire is 200 ft. The cost, including house and land for additional site, is 24,000l.

**Wind Pressure on Railway Structures.**—In the House of Commons on the 3rd inst., Sir R. Lind-ay asked the President of the Board of Trade whether the committee, which he stated in the House of Commons in July, 1880, was appointed to consider what rules it might be desirable to make with regard to wind pressure upon railway structures, had yet made a report, and, if so, whether he would be prepared to lay it upon the table of the House? Mr. Chamberlain said that the report would be made shortly after the Whitehall recess, and that he would consider whether it was desirable to lay it upon the table.

**The Crown Foreshores of Ireland.**—The *Pall Mall Gazette* prints a long letter on the Land Bill, from "A Conservative," suggesting Mr. Gladstone would do well to add to the Land Bill in committee the Crown foreshores for reclamation. There are in Ireland about four millions and a half of acres of waste lands, of which nearly the half are reclaimable, and will be provided for in section 25, part 5, of the Bill. The Crown foreshores occupy about 250,000 acres, which, by the Act of 1866, were vested in the Board of Trade; and if they were embanked and drained, there is little doubt that they would set well in the forty-acre lots.—*Freeman's Journal*.

**The Panama Canal.**—A *Times* telegram from Philadelphia states that "M. de Lesseps's Panama Canal Company have bought the Panama Railroad, paying for it \$250 per share, aggregating \$17,500,000, besides leaving the stockholders the present surplus assets of the railroad, worth \$45 per share more. Four millions of the purchase-money are to be paid on the 1st of July, and the remainder in five annual instalments, the Canal Company having the privilege of paying all within eighteen months. The Railroad Company retain possession till the entire sum has been paid. They also sell subject to a debt of four millions. The railway cost twelve millions.

**The International Medical and Sanitary Exhibition.**—His Royal Highness the Duke of Edinburgh, in response to the request of the committee, has consented to become the patron of the Exhibition. The whole of the floor-space will be allotted this week, with the exception of a portion which the committee have decided to set apart for exhibiting the work of journeyman plumbers. Under special regulations this work will be exhibited free of charge, and it will include the specimens of workmanship produced by the competition for the prizes in connexion with the lectures on plumbing now being delivered at the Society of Arts.

**Destruction of a Theatre.**—The Theatre Royal, Belfast, was destroyed by fire on Wednesday morning. It has been built only seven years, and cost 12,000l.

**The Channel Tunnel Works.**—The boring operations at the Channel Tunnel works continue to advance at a steady but improved rate of progress, the average of which has now been permanently increased to between 60 yards and 70 yards a week, the total length of the heading having now reached a distance of 700 yards. After the workmen have succeeded in boring 250 yards beyond this distance, it is intended to remove the machinery to the shaft near Shakespeare's Cliff Tunnel, and bore to meet the present heading. There is no alteration in the formation of the strata, and the work, which continues to proceed very satisfactorily, has attained a depth of about 25 ft. below high-water mark.

**The Obstructive Gates in the Euston-road.**—The St. Pancras Vestry have succeeded in obtaining the removal of one of these gates. On the 3rd inst. the Mabledon Gate, the first obstruction in the Euston-road, near the Midland Station, was cleared away, and an important thoroughfare is now open to the public, to be further improved by the demolition of the lodge and adjoining sheds which narrow the entrance.

**University College, London.**—Professor T. Hayter Lewis has resigned the Chair of Architecture in this College. Mr. T. Roger Smith, who is now conducting the classes, having been appointed by the Council of the College to do so in the current and two previous sessions in the absence of Professor Lewis, is a candidate for the permanent appointment, and will, we hope, obtain it. He has already well proved his fitness for the position.

**International Woolen Exhibition.**—This exhibition, opened at the Crystal Palace on the 2nd inst. by H.R.H. the Duke of Connaught, is the first of an intended series of exhibitions illustrative of the industries of this country. It comprises wool, woollen manufactures, and machinery in motion.

**Hastings.**—The erection of a new Roman Catholic Church has been commenced. The cost of the building will be between 8,000l. and 10,000l., towards which the poet Coventry Patmore has contributed 5,000l., and the Duke of Norfolk has also given a large donation.

**United Arts Gallery, New Bond-street.**—We are asked to say that this gallery will be open free to the public every Saturday evening during June, from 6 to 10 o'clock.

**South Kensington Museum.**—The special loan collection of Spanish and Portuguese Art will be opened to the public (Saturday) morning, June 11th.

## TENDERS

For new roads, sewers, and surface-water drains, for the British Land Company (Limited), on their estate at Hornsey, Mr. Henry B. Michell, surveyor:—

Keeble, Regent's Park	£1,376 0 0
Bell, Wood-green	1,145 0 0
Killingback, Camden-town	1,109 0 0
Crockett, King's-cross	1,407 0 0
Acock, City	3,887 0 0
Kings, Bristol	3,829 0 0
McKenzie, City	3,787 0 0
Harris, Camberwell	3,725 0 0
Nowell & Robson, Kensington	3,710 0 0
Pizzey, Hornsey	3,677 0 0
Jackson, Leyton	3,555 0 0
Dunmore, Hornsey	3,547 0 0
Thompson & Son, Battersea	3,480 0 0
Kraus, Walthamstow	3,350 0 0
Peil, Bromley (accepted)	3,185 0 0

The new roads, sewers, and surface-water drains, for the same company, Mr. Henry B. Michell, surveyor:—

Keeble, Regent's Park	£2,673 0 0
Killingback, Camden-town	2,530 0 0
Bell, Wood-green	2,579 0 0
Harris, Camberwell	2,600 0 0
Crockett, King's-cross	2,481 0 0
Wilson, Walthamstow	2,480 0 0
Pizzey, Hornsey	2,440 0 0
Nowell & Robson, Kensington	2,400 0 0
McKenzie, City	2,391 0 0
Acock, City	2,389 0 0
Thompson & Son, Battersea	2,350 0 0
Dunmore, Hornsey	2,329 0 0
Jackson, Leyton	2,223 0 0
Kraus, Walthamstow	2,118 0 0
Peil, Bromley (accepted)	2,170 0 0

For Rotherhithe and Southwark sewer, for the Metropolitan Board of Works, Sir J. Bazalgette, engineer:—

Kellett & Bentley, Raling (accepted)	£59,000 0 0
--------------------------------------	-------------

For the construction of 310 feet of river wall and landing-stage at West Ham gas-works, Stratford, Mr. R. E. Thorman, engineer:—

Cox	£3,067 0 0
Wood Bros.	2,963 0 0
Mundy	2,469 0 0
Lawrence	2,348 0 0
Bangs	2,330 0 0
Barnett	2,200 0 0
Perry & Co. (accepted)	2,000 0 0

For patent safety lift, revolving shutters, sun blinds, and pavement lights:—

Clarke, Bunnett, & Co.	£171 15 9
------------------------	-----------

For erecting a new warehouse in Prince's-street, Ipswich, for Mr. W. Jolly, Mr. William Rade, architect:—

Robert Girling	£2,094 0 0
B. W. Whiting	1,998 0 0
D. C. Jones & Co.	1,860 0 0
J. B. & F. Bennett (accepted)	1,835 0 0

For the erection of three cottages on Mayfield Estate, Cribbs-guiseway, near Bristol, for Capt. G. Cawley, Mr. E. G. Warren, architect:—

Stephen & Bastow	£769 0 0
Bryant & Tucker	705 0 0
Forces & Ashley	670 0 0
Saville & Co.	655 0 0
Wright & Podger	654 10 0
Harridge	500 0 0
Hunt (accepted)	426 10 0

For repairs, &c. to houses at Malden-crecent, Kentish-town, for Mr. F. W. Rowney, Messrs. Ribbotts & Cobb, architects:—

R. Perkins	£165 13 0
------------	-----------

For alterations and additions to premises, Oak-street, Abingdon, for the Besonsfield Conservative Club, Mr. E. Doby, architect:—

Williams (accepted)	£310 0 0
---------------------	----------

For house at St. Paul's Cray-common, Chislehurst, for Mr. R. H. Boyce:—

Mr. Joseph Dorcy (accepted)	£3,168 0 0
-----------------------------	------------

For rebuilding the Jack of Newbury, Kennel-road, for Mr. Richard Rogers, Mr. C. H. Thomas, architect:—

Cook	£1,890 0 0
Manley	1,787 0 0
Hook & Oldrey	1,668 0 0

For the erection of a church and schoolroom, with boundary walls, Gresham, near Esher, for Mr. J. P. Morton, Mr. S. W. Haughton, architect, Quantities by the architect:—

J. Godley, East Grinstead	£1,804 0 0
H. Wallis, Lingfield	1,783 0 0
G. & F. Penn, Pembury	1,771 0 0
J. Waters, Forest-row	1,654 10 0
E. Vaughan, Maidstone	1,467 0 0
Charlwood Bros., East Grinstead	1,461 15 0

\* Accepted.

For re-building premises, Rampant Horse-street, Norwich, for Messrs. Colman & Co., Mr. E. Boardman, architect:—

Corah & Gaymer	£7,000 0 0
Young	5,833 0 0
Locey	5,668 0 0
Dowling	5,499 0 0
Hawes	5,395 0 0
Widd	5,307 0 0

For roads and sewers, at Calator Park Estate, Stratford, for Mr. J. Edmondson, Messrs. W. Waymouth & Son, surveyors:—

Bloomfield	£3,270 0 0
Jesse Jackson	2,897 0 0
Jno. Jackson	2,895 0 0
Haris	2,835 0 0
Taylor (accepted)	2,615 0 0

For repairs to No. 24, Notting Hill-terrace, for Miss Sneyd, Messrs. W. Waymouth & Son, architects:—

Colls	£182 0 0
J. W. Sawyer (accepted)	173 0 0

For completing two villa-residences at Holly Park, Crouch-hill, for Mr. W. Jackson, Messrs. W. Waymouth & Son, architects:—

Churchward (accepted)	£1,288 0 0
-----------------------	------------

For the erection of a new rectory-house for the parish of St. Mary-le-More, Wallingford, for the Rev. C. A. Raymond, Mr. Edwin Doby, architect, Quantities by the architect:—

	With Gray Beaders.	With Yellow Stocks.
Smallbone, Stratley	£2,240 0 0	£2,300 12 0
Dodd, Caversham	2,167 7 4	2,170 7 4
Brasher & Son, Wallingford	2,095 6 8	2,055 0 0
Holly & Butler, Nettlebed	2,078 0 0	2,000 0 0
T. Jones, Oxford	2,058 0 0	2,088 0 0
Silver & Sons, Maidenhead	1,939 0 0	—
T. Selby, Oxford	1,935 0 0	1,948 0 0
Engleles, Banbury	1,925 0 0	1,925 0 0
Wheeler, Wantage	1,918 3 1	1,888 3 1
Williams, Abingdon	1,723 0 0	1,742 0 0

\* Recommended for acceptance.

For a new billiard-room, The Abbey, Abingdon, for Mr. J. T. Morland, Mr. Edwin Doby, architect:—

Thatcher, Abingdon	£320 0 0
Williams, Abingdon (accepted)	237 0 0

For making additions to a pair of villas, Marcham-road, Abingdon, for Mrs. Payne, Mr. E. Doby, architect:—

Drew, Abingdon (accepted)	£548 5 0
---------------------------	----------

For the superstructure of offices and shops, Gray's-inn-road, for Mr. R. Ryall, Mr. G. Vickery, architect, Quantities supplied by Mr. H. H. Leonard:—

George Crabbs (accepted)	—
--------------------------	---

For new residences, Oakhurst-grove, Peckham, for Mr. Thomas Bromser, George V. S. Blackburne, architect:—

C. E. Elves, Croyant Works, Mile End (accepted)	£3,900 0 0
---	------------

For new residences, Carlingford-road, Hampstead, for Mr. Thomas Brenner, George V. S. Blackburne, architect:—

C. E. Elves, Croyant Works, Mile End (accepted)	£5,100 0 0
---	------------

For altering and building additions to Nos. 1, 2, and 3, Avenue-place, Farnham-green, for Mr. Thomas, Mr. Geo. Whitaker, architect:—

Whitman	£1,817 0 0
Widdman	1,675 0 0
Hook & Oldrey (accepted)	1,561 0 0

For the erection of a detached cottage, Rusham-road, Nightingale-lane, Wandsworth-common, for Mr. James H. Bartlett. Mr. Edward Witte, architect. Quantities supplied:—

McLauchlan & Sons	£1,930 0 0
Newton	1,745 0 0
Simpson & Co.	1,728 0 0
R. & B. Smith (too late)	1,410 0 0
Bash	1,671 0 0
Gregory	1,463 0 0
Richardson	1,470 0 0
Johnson	1,352 4 11
Triggs	1,295 0 0
Holloway	1,291 0 0

For a villa residence in the Broadland's-road, Highgate, for Mr. R. M. Turnbull. Mr. J. Clark, architect. No quantities:—

Hunt, Smithfield	£3,840 0 0
Green, Clapton	2,980 0 0
King, Hornsey	2,490 0 0
Dupont, Colchester	2,265 0 0
Brown, Highgate	2,195 0 0
J. O. Richardson, Clapham	2,050 0 0

\* Accepted.

For First Portion of school buildings, Leytonstone, Essex, for the Guardians of the Poor of the Parish of Bethnal-green. Messrs. A. & C. Harston, architects. Quantities supplied:—

Crockett	£15,191 0 0
J. O. Richardson	14,587 0 0
Kilby	14,489 0 0
Johnson	13,922 0 0
Shurmer	13,425 0 0
Shaw	13,064 0 0
Jones & Co.	12,978 0 0
Julian & Co.	12,450 0 0
Braid & Co.	12,750 0 0
Garrod	12,653 0 0
Jackson & Todd (accepted)	11,570 0 0

For new road and pipe-sewers on the Hyde House estate, Edmonton:—

Wilkes & Co.	£1,119 0 0
Pisary	595 0 0
Rutty	599 0 0

For two villa residences, Mansfield, Notts, for Mr. R. Barringer. Mr. T. Hartas, architect. Quantities by Mr. J. G. Fetherick:—

Greenwood, Mansfield (accepted, subject to revision)	£1,840 0 0
--	------------

For two villa residences, Nottingham, for Mr. J. Armistage. Mr. T. Hartas, architect. Quantities by Mr. J. G. Fetherick:—

Bail & Son, Nottingham (accepted, subject to revision)	£1,570 0 0
--	------------

For erecting new stores for the Faversham Co-operative, Industrial, and Provident Society (Limited). Mr. Edwin Prover, architect:—

T. Cornelius, Whitstable	£2,495
G. Johnson, Faversham	2,282
W. Judges, Boughton	2,203
L. Shrubsole, Faversham	2,047

\* Accepted.

For additional wing to Dr. Quin's residence, Woodville, Sheffield. Mr. J. P. Earle, architect:—

Rodley & Son, Sheffield	£2,005 0 0
Hirst, Bros, Norton	187 0 0
Fordham, Sheffield (accepted)	150 0 0
Willows, Sheffield	148 0 0

For enlargement and additions to a Congregational Chapel at Cove-end, Maidenhead. Mr. Arthur Vernon, architect:—

Hunt	£240 0 0
Woodbridge	795 0 0
Lovell	745 0 0

For new wing, &c., to North-town School, High Wycombe. Mr. Arthur Vernon, architect:—

Woodbridge	£750 0 0
Gibson	683 0 0
Taylor & Grist	662 0 0
Nash	635 0 0
Corby	595 10 0
Hunt	595 0 0
Loxley	579 11 6
Holland	573 0 0

For rebuilding the Book of Gibraltar tavern, on the Lambeth Hayes estate, for Mr. J. W. Craddock (exclusive of all fittings). Quantities by Mr. Henry Smith. Messrs. Waring & Nicholson, architects:—

J. & H. Mills	£3,330 0 0
W. Shurmer	3,159 0 0
W. Downs	2,978 0 0
H. Barnam	2,869 0 0
W. L. Simpson	2,785 0 0
Canning & Mullins (accepted)	2,769 0 0

For additions to the Art Schools at Kennington, for the Council of Technical Education. Quantities supplied by Mr. G. B. Tasker. Mr. Ralph Nicholson, architect:—

Peto Bros.	£1,091 0 0
Ansell	994 0 0
Bywater	987 0 0
Robson	968 0 0
Clemence	945 10 0
Maraland (accepted)	915 0 0

For alterations and additions to St. Aloysius' Schools, Horney-lane, Highgate-hill. Mr. A. Vicars, architect. Quantities supplied:—

Hook & Oldrey	£4,159 0 0
Langmead & Way	3,998 0 0
Falsman & Fotheringham	3,938 0 0
Staines & Son	3,944 0 0
Heath	3,860 0 0

For restoring and reseating the parish church of Broughton Astley, Leicestershire. Mr. William Bassett Smith, architect:—

J. & W. Harold	£2,103 13 10
Palmer	1,938 0 0
Allen	1,873 0 0
Bromwich	1,885 0 0
Lovely	1,529 0 0
Eley & Wade	1,518 0 0
Young	1,475 0 0
Bland & Sons (accepted)	1,451 0 0

For alterations to the Angell-town Institution, Brighton, for Mr. W. Lemare. Mr. J. W. Stevens, architect:—

J. O. Richardson, accepted.

Army and Navy Hotel.—Mr. Pilkington says that Mr. Barle was not the surveyor for the work, although employed by the Messrs. McGregor to a certain extent.

#### TO CORRESPONDENTS.

H. R. S. (please send particulars to accompany view).—W. S. J. D. & Son.—E. L. B. & Son.—W. W. & Son.—J. Mel.—B. S. R.—W. B. S.—E. D. J.—F. B. S.—W. H. R.—G. W. H.—B. M. H.—W. O.—J. D. H.—T. A. V.—R. P. S.—D. M.—E. B. R.—C. E. W.—M. & Co.—B. & Son.—R. G. R.—W. G. R.—F. T. P.—J. D. C.—W. E. H.—R. G. T.—R. W. E. K.—A. G. H.—A. T. S.—G. W. N. (gone by).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses.

Notes.—The responsibility of signed articles, and papers read at public meetings, rest, of course, with the authors.

#### CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE, AND GENERAL ADVERTISEMENTS.  
Six lines (about fifty words) or under..... 4s. 6d.  
Each additional line (about ten words)..... 0s. 6d.  
Terms for series of Trade Advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

FOUR Lines (about THIRTY words) or under..... 5s. 6d.  
Each additional line (about ten words)..... 0s. 6d.

REPLIES TO ADVERTISEMENTS.  
Addressed Box — Office of "The Builder".

Cannot be forwarded, but must in all cases be called for, and the Box left open, on order.

THE CHARGE FOR A BOX IS AS UNDER:—  
For "Situations Wanted" advertisements..... 3d. per Week.  
For all other Advertisements..... 6d. per Week.

PREPAYMENT IS ABSOLUTELY NECESSARY.  
\* \* \* Stamps must not be sent, but all small sums should be remitted by Check to Registered Letter or by Money Order, payable at the Post-office, King-street, Covent-garden, W.C. to

DOUGLAS FOUNDRINER, Publisher.  
Addressed to No. 34, Upper Gloucester-street, W.C.

Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. sent at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

#### TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to readers in any part of the United Kingdom at the rate of 15s. per annum, prepaid. Remittance payable to DOUGLAS FOUNDRINER, Publisher, 46, Catherine-street, W.C.

**Best Bath Stone.**  
**WESTWOOD GROUND,**  
Box Ground, Combe Down,  
Corsham Down,  
And Farleigh Down.  
**RANDELL, SAUNDERS, & CO., Limited,**  
Corsham, Wilts. [ADVT.]

**Box Ground Stone**  
Is the best for use in all exposed positions, being a well-known and tried weather stone.  
50,000 feet cube in stock.  
**PICTOR & SONS,**  
Box, Wilts. [ADVT.]

**Doubling Freestone and Ham Hill Stone**  
of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to **CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset.**—Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [ADVT.]

**Doubling Stone and Ham Hill Stone,**  
of best quality. Prices and Estimates, including delivery to any Station, on application to **STAPLE & HANN, Quarrymen, Stoke-sub-Hamdon, Ilminster.** Agent, E. CRICKMAY, No. 4, Agar-street, London, W.C. [ADVT.]

**Asphalte.**  
Seysse, Patent Metallic Lava, and White Asphaltes.  
**M. STODART & CO.**  
Office:  
No. 90, Cannon-street, E.C. [ADVT.]

**Asphalte.**—The Seysse and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, gun-rooms, and terraces. [ADVT.]

**Immense quantities of**  
**DRY WAINSCOT,**  
**DRY MAHOGANY,**  
**DRY WALNUT,**  
in all thicknesses.  
**B. J. HUDSON & SONS,**  
Whitefield-st., W., and Great Peter-st., S.W., London. [ADVT.]

**J. L. BACON & CO.**  
MANUFACTURERS OF  
**IMPROVED HOT-WATER APPARATUS,**  
FOR WARMING AND VENTILATING  
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.  
OFFICES AND SHOW-ROOMS:—  
No. 34, UPPER GLOUCESTER PLACE,  
DORSET SQUARE, LONDON, N.W.  
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

## CHAPPUIS' PATENTS FOR REFLECTING LIGHT.

### DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,

### ARTIFICIAL LIGHT REFLECTORS.

ALSO

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

**P. E. CHAPPUIS, Patentee and Manufacturer, 69, FLEET-STREET, LONDON.**

**NOTICE.**—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.  
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

# The Builder.

VOL. XL. No. 2022.

SATURDAY, JAN. 18, 1881.

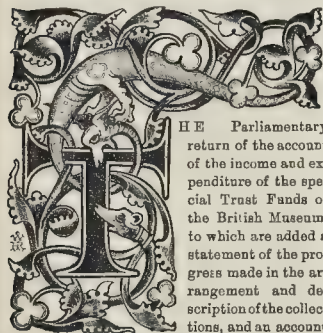
## ILLUSTRATIONS.

Office of the Life Assurance Society, "Germania," Friedrichstrasse, Berlin (Double-page Engraving).—Herren Kayser & Von Grossheim, Architects.....	762
Bits from Alton, Haunts: The Old Grammar School; Small House in Market-square.....	764
The Alexandra Theatre, Panton-street, Haymarket.—Mr. Thomas Verity, Architect.....	768
Wyggestone Hospital, Leicester: New Girls' School (with Plan).—Mr. Edward Burgess, Architect.....	767

## CONTENTS.

A Year's Progress at the British Museum.....	761	The Scotch System of Taking Quantities: Edinburgh Architectural Association.....	771	Sale of Freeholds in Wood-street.....	779
Conference: French and English.....	763	Architectural Association.....	774	Surveyors' Items.....	779
Exhibition of Spanish and Portuguese Ornamental Art at South Kensington.....	765	Sanitary Plumbing, Traps and Trap Ventilation.....	774	The Minutiae of Banks.....	779
"Le Salon" at London.....	766	From Annals.....	775	Butt of Buildings to Lateral Support: The Commissioners of Works and Public Buildings, Anquetil and Dalton.....	779
The "Black and White" Exhibition.....	769	Foreign and American Serials.....	776	Provincial News.....	779
The Story of Power: The New Building in Science.....	770	Fymouth Art-Exhibition.....	777	Mildew.....	779
Houses and Haunts in the Market: Cowper's Home at Warden Underwood.....	771	Votes for Public Works: Building for the Civil Service.....	777	The Plumbing Lectures at the Society of Arts.....	779
Decorations as applied to Architecture from a Palace's Point of View.....	772	Obituary.....	777	Architects and Quantities.....	779
Sketches in Alton, Haunts.....	773	Succession.....	778	Church Building News.....	779
The Alexandra Theatre, London.....	773	Deaths.....	778	School Board School's.....	780
Wyggeston Hospital Girls' School.....	774	The Alexandra Park Estate.....	778	Roman Altar at Chichester.....	780
		Sale of Building Land at Kilburn.....	778	Sanitary Assurance Association.....	780
				Musicians.....	780

### A Year's Progress at the British Museum.



THE Parliamentary return of the income and expenditure of the special Trust Funds of the British Museum, to which are added a statement of the progress made in the arrangement and description of the collections, and an account of the objects added

to them in the year 1880, has just been issued, and a very hasty glance at the contents of this instructive document will convince the reader of the great and general progress that has been made. The most important item in the accounts is the new one of the bequest of the late Mr. William White, amounting to nearly 62,000*l.*, inclusive of interests, out of which 200*l.* have been devoted to the erection of sheds in the inner quadrangle of the Museum for the reception of sculptures recently housed under the Museum portico, where the former sheds considerably marred the general coup d'*œil* of the southern front; and between 3,000*l.* and 4,000*l.* in connexion with new boiler, boiler-house, and improved warming apparatus, the comfort of which is greatly felt in the wintry months. The return of the number of persons admitted gives a total of 839,374 for 1880, as against 782,823 in 1879, and 611,612 in the preceding year. On the other hand, the departments of Maps, Manuscripts, and Natural History, and the galleries of sculpture, show a falling off in the numbers of those admitted for special purposes of study or research. The first step in the removal of the natural history portion of the Museum collections was taken at the end of July last by the transport of the contents of the Mineralogical Department to the new building in Cromwell-road, South Kensington, and by the end of September the three departments of Mineralogy, Geology, and Botany were safely placed in their new repository, designated the "British Museum (Natural History)." The minerals not having been displaced from their cases were rapidly made ready for exhibition, but it was otherwise with the fossils and the botanical specimens. In the old building the fossils had been provided with small exhibition space, and a complete set of cases had to be supplied to them in the new museum. There have been delays in furnishing these with internal fittings, and the arrangement of the specimens could not be carried out immediately. But every effort is now being

made to press on the work of arrangement in all the galleries occupied by the three departments; and, indeed, the collections have been from an early period accessible to students. The building itself was thrown open to the public on the 9th of April. This removal denuded a considerable space at the British Museum, which has been replenished by the extension and re-arrangement of the antiquities, and by the temporary displacement of the Zoological Department. The sarcophagi, statuettes, stellas, and other objects of Etruscan antiquity, hitherto only seen at a considerable disadvantage, have been characteristically displayed in the Northern Gallery, which also in another part receives the whole of the immense collection of Egyptian antiquities,—the mummies, coffin-cases, and funeral paraphernalia being arranged in one room, while a second room contains the objects of domestic life, and choice examples of the arts and manufactures which once flourished on the banks of the Nile. The old Egyptian Rooms have been delivered over to the exhibition of stellas and miscellaneous Greek and Roman antiquities, and the rooms formerly occupied by the Botanical Department on the front first floor at the eastern angle of the Museum have been assigned to the department of British and Medieval Antiquities. The prints and drawings have obtained a welcome addition to the limited space hitherto occupied by their department, by accession to the room previously occupied by the Entomological collections, which, together with the store of birds and other smaller specimens of zoology, have gone up to the old Mineralogical rooms, pending their migration to the Cromwell-road building. The remaining part of the unsightly sheds under the columns of the Great Russell-street frontage, after standing for twenty-three years, has been removed; the sculptured slabs from the Amaravati Töpe, and other Indian antiquities for the Indian Museum at South Kensington, have been set up against the walls of the principal staircase, and the great collection of drawings and prints illustrating London topography have been temporarily exhibited in the King's Library.

Mr. Bond, to whose energetic superintendence the alterations which we have pointed out are mainly due, reports several interesting circumstances relating to the educational aspect of the Museum; duplicate specimens from the zoological collections have been set apart during the process of arrangement, and presented to several local museums. In this way the Sheffield, Maidstone, Scarborough, Dublin, Calcutta, and South Kensington Museums, and the Oxford Institute have been enabled to enrich their collections with useful objects. Provision also has been made, we are informed, in the estimates for the current year, for supplying a limited number of public institutions in the United Kingdom with electrotype copies of coins, and copies of drawings and engravings taken by a photographic printing process; the object here, as before,

being to contribute to the formation of collections of such works in the principal centres of population throughout the kingdom, as a means of education. The printing of the titles of all newly-acquired books, for insertion in the general catalogue, has been carried out during the year on the plan originally devised; and the scheme of printing, in respect to the catalogue of the library, has been further extended to include volumes of that catalogue which have become so filled with entries as to necessitate their being broken up and the slips relaid. The contents of such volumes will henceforth be printed in a form to range with the rest of the catalogue, and with vacant leaves to receive additional titles of books hereafter acquired. Headings of special interest, whether of subjects or authors, such as Academies, Bible, Liturgies, Periodicals, Shakespeare, &c., will be printed in a separate way, and offered for general purchase. Another detail of general administration which will bear good fruit is the expediting of the service of books to and from the reading-room, by bringing in close connexion to it books frequently required by readers; the two capacious galleries running round the room itself will receive a new selection of books, to consist of additional works of reference, and generally such volumes as have been found to be most often asked for by students. This re-arrangement has been already commenced.

During the past year several publications have been prepared by the departments, and published under the authority of the Trustees. Among them we may mention the second edition of the fac-simile of the "Codex Alexandrinus," vol. iv., containing the New Testament and Clementine Epistles, edited by Mr. E. M. Thompson, F.S.A., Keeper of the Department of Manuscripts. This work issues from the press opportunely at the time when the new translation of the Testament has drawn attention of the public at large to the critical study of the Scriptures and the importance of the ancient manuscripts upon which that study is based. The Index to the Catalogue of Additions to the Manuscripts in the years 1854-1875; the Catalogue of the Persian Manuscripts, by Dr. Chas. Rien, Keeper of the Department of Oriental Manuscripts; a Selection from the Miscellaneous Inscriptions of Assyria, being Cuneiform Inscriptions of Western Asia, vol. v., by Major-General Sir H. C. Rawlinson and Theophilus Pinches; the Guide to the Sculptures of the Parthenon, in the Department of Greek and Roman Antiquities, and the Guide to the Sculptures in the Elgin Rooms, both by Mr. C. T. Newton; Catalogue of Birds, vol. v., Passeriformes, by Henry Seebohm, with coloured plates; two volumes of Typical Specimens of Lepidoptera Heterocera, by Lord Walsingham and A. G. Butler; and several Guides to the Exhibition Galleries of the Natural History Museum at South Kensington, have also appeared during the year under review.

In the Department of Printed Books, 46,174

titles have been printed in accordance with the adoption of that system of reference in place of transcription or hand-copying previously employed. No fewer than the great sum total of 1,107,046 volumes have been required by 133,842 readers, which gives an average of 3,794 books and 458 readers daily. During the year 76,774 books, newspapers, or parts of volumes, have been acquired either by purchase or presentation. Among these may be noted a considerable number of rare Mexican books, bought at the sale of the remarkable collection formed by the late Don José Fernando Ramirez, president of the Emperor Maximilian's first Ministry. Amongst them are a few of the earliest productions of the Spanish-American Press, and some very rare and curious works in the various native languages. Perhaps the most curious book among these is a volume containing two works of Alonso Gutierrez, called *Veracruz*, a Spanish missionary, entitled respectively "*Recongnito Summularum*" and "*Dialectica Resolutio cum textu Aristotelis*"; they were both printed in Mexico by Juan de Pablos in 1584, and are both of excessive rarity. Bound up with them are two leaves of the Agave paper, such as was in use among the natives of the New World before the conquest of the country by the Spaniards. But the interest to the English student consists in the fact that the title of the latter of these two works is enclosed in the identical woodcut border used by the English printer, Edward Whitchurch, for his edition of the first Prayer-book of Edward VI., in 1549, and which appears to have been exported afterwards to America. It bears the initials of that printer, E. W., but the Catholic emblem of the bleeding heart has been substituted for the shield of arms of Queen Katharine Parr, which previously appeared at the foot of the title. The purchase made at the Ramirez sale, added to the collections already secured from the Andrade and Fischer Libraries, render the Museum extremely rich in Spanish-American literature. Many rare liturgical books have been purchased, principally service-books for various local uses among Continental congregations, printed in the fifteenth and early sixteenth centuries. The earliest of these are, perhaps, the *Constance Breviary*, 1475; the *Dominican Missal*, printed at Naples in 1433; the *Basil Breviary*, 1488; and a *Processionale* for the *Preaching Friars* of Seville, 1494. These constitute a very valuable addition to the Museum collection of liturgies, the deficiencies of which are being gradually filled up by purchases made from year to year. There have been added also a large collection of German works and broad-sides of the sixteenth to the eighteenth centuries. The Music Library has been well reinforced, chiefly from the well-known library of Dr. F. Gehring, of Vienna, which was sold at Vienna last winter, whereat the Museum secured above 300 works in every branch of music, most of them being of high interest, many of great rarity, and some quite unknown to the bibliographers of music. The Map Department, since the resignation of Mr. R. H. Major, F.S.A., has been made a sub-department of the general library, under Mr. R. K. Douglas, the professor of Chinese. There is little of general interest in the report of this department, but among the acquisitions of the year are,—a large engraved view of Seville, by Fred. de Wit, of Amsterdam, circa 1630; another of Madrid; and a series of plans, elevations, and sections of British earth-works and stone remains surveyed by Mr. W. M. Flinders Petrie.

The Department of Manuscripts reports the addition of many important historical, artistic, and literary relics. The principal are,—an Evangelary, and a Horologion, or daily service-book, in Greek, of the twelfth century; a series of charters, of early date, relating to the little-known Cistercian nunnery of Sixwold, in Lincolnshire, and to the family of Ferrers, Earls of Derby, with fine seals; a roll of the return made to the Crown of all lands, rents, &c., granted or bequeathed in mortmain for religious purposes in the city of London, from 7 Edw. I. to 38 Edw. III., A.D. 1278-1364; a chronicle of Mexican history to A.D. 1576, partly in the native hieroglyphic or picture-writing; the diary of Richard Cook, chief of the English factory in Japan, 1615-22; papers of Richard Baxter, the Nonconformist, in his own handwriting, being portions of his memoirs and fragments of theological tracts, of the time of Charles II.; and correspondence of members of the exiled family of the Stuarts at St. Germain, and its ministers, with the Cardinals Caprea

and Gualterio, among which will be found letters of Queen Mary of Modena, James Francis, the old Pretender, the Duke of Perth, the Earl of Middleton, Lord Caryll, D. Nairne, the Pretender's secretary, &c., 1688-1727. This manuscript library has also acquired a series of the correspondence and papers of Simon Fraser, Lord Lovat, relating to his negotiations with the Jacobite and French Courts for the invasion of Scotland, 1702-4, and his correspondence with Cardinal Gualterio during his subsequent detention in France, 1704-6; the correspondence and register-books of Admiral Sir John Jervis, afterwards Earl of St. Vincent, 1757-1823; the correspondence of the Right Hon. Nicholas Vansittart, Chancellor of the Exchequer from 1812 to 1823, and subsequently Lord Bexley, 1796-1844; and the literary collections of the late Charles Wycliffe Goodwin, chiefly consisting of philological notes and dictionaries of the Egyptian and Coptic languages, of which he was so profound a scholar. A portion of the collection of manuscript music formed by Mr. Julian Marshall has been secured for this department, embracing nearly three hundred volumes of the works of English and foreign composers from the sixteenth century to the present day. Some of these are original and holograph, and several have not yet been published. Among them are compositions by Byrd, Blow, Lawes, Jenkins, Handel, Bononcini, Jomelli, Cimarosa, Haydn, Beethoven, and Mendelssohn.

Dr. Rien, the Keeper of the Oriental Manuscripts, has acquired for the Museum a Pali collection, formed in Ceylon by the late Mr. Robert C. Childers, consisting of twenty-nine MSS., for the most part written in the Cingalese character, partly on palm-leaves and partly on paper. They contain several books of the Buddhistic canon with commentaries, historical works, and grammatical treatises. The same library received seven Mongolian MSS. of large size, collected in Siberia, from 1817 to 1841, by the Rev. Edw. Stallybrass. They include Buddhistic works, tales, history, legends, and various treatises. To this, also, was presented by Capt. S. B. Miles, Political Agent in Muscat, a collection of Syriac, Coptic, and Arabic MSS., rich in the literature of the Nestorian Church, with portions of the Syriac Scriptures, service-books, lives of saints, records of councils, chronicles of the Church, and theological treatises. One volume of portraits of eighty-eight emperors of China, and another of Chinese classes and trade, by native artists, demand attention for the careful details and faithful depiction of the minutiae of Chinese life. To these we may add a note of the treatise on early Chinese characters from the library of the late Consul Goodwin. Armenian literature, circumscribed as it is, contributes a copy of the four Gospels, with ornamental initial letters of the date 744 Armenian era, corresponding with our A.D. 1295.

Passing now from the departments of Ancient and Modern Literature to those dedicated to the collection of Antiquities, the Oriental series, presided over by Dr. Birch, the Nestor of archaeology, presents many new features of progress during the past year. Progress has been made with the lithographic *fac-simile* of an early rectangular wooden sarcophagus, the text of which in time, no doubt, will be edited by the learned keeper. Bronze figures of members of the Anthropomorphic Zocephalic Pantheon of Egyptian Cults, silver figures of Nefertum, porcelain figures of Thousen the Hippopotamus of the Heavens, wooden coffins gaudily painted with chapter and verse of the funeral ritual or service "*Book of the Dead*," toys and playthings, vases, leaden and terra-cotta ornaments, and domestic "*fixings*," have not failed to find their way, by labyrinthine paths perhaps, to the Egyptian collection at the British Museum. As to Assyrian and Babylonian relics, the labour of intelligent excavators, the private enterprises of native dealers, and the multifarious circumstances which always produce a marked gravitation towards an attracting focus or centre, have combined to make up a goodly total of objects acquired by the Department from the mounds and waste heaps which mark the sites of ruined cities, the homes of a teeming and intelligent population, and the abiding-places of those who, in their day, swayed the rod of the empire of the world, until it fell from their grasp in obedience to divine decrees. Where we now pick up an inscribed tablet, or the glittering fragment of a crystal throne, a potsherd with a receipt for taxes or a curse

upon a neighbour written on it, or a bottle of iridescent glass, there, a few thousand years ago, a few backward steps of time, throbbled the literary, political, domestic, and artistic life of a mighty nation, little, if at all, less civilised than ourselves to-day, and at any rate actuated by the same motives, impelled by the same springs of action, and controlled by the same human feelings which influence the whole of modern society in these late days,—a rhythmic pulsation which, while it was in full action, created no astonishment among those who contributed to maintain it, but has left little besides the shreds of its glory to be the wonder and admiration of succeeding phases of mundane intellect. In the Assyrian division the whole of the bronze plates from the gates of Balawat have been repaired and mounted, and the Society of Biblical Archaeology has commenced the publication of photographs of the curious and remarkable historical scenes with which they are covered in *repoussé* work. From Konyunjik, the site of Mr. now Sir, Henry Layard's famous discoveries, the Museum has obtained parts of a small, delicately-moulded man-headed bull, the pedestal finely ornamented with bas-reliefs, taken from the site of Sennacherib's palace; terra-cotta cylinders containing the annals of the earlier years of Sennacherib's reign, closing with the expedition of that monarch against Hezekiah, king of Judah, and dated B.C. 700; a letter, written on clay, to Assurbanipal relating to a king of Elam; and another to the same from his brother Samassumaukin, king of Babylon. Babylon contributes a very ancient inscribed cylinder of green jasper, of a date about B.C. 2,000; a finely-sculptured figure of Assurbanipal, king of Assyria, in high relief, attired in regal robes, and with the distinguishing head-dress, bearing on his head a wicker-basket (the back and sides of this figure are inscribed); a very fine bilingual list of words from Birs-Nimrod, and several other important syllabaries and bilingual texts of immense value towards deciphering the language and settling the philology, which is still uncertain and frequently disputed. From Van come an interesting bronze ornament, perhaps part of a throne, decorated with the figure of a lion couchant, and inlaid with concentric rings of composition, alternately black and white, with traces of gold overlaid; fragments of a leaden object, probably used for decorative purposes, inlaid with rings of blue and white paste, and ornamented with blue glass beads; and a white ivory human figure, winged and eagle-headed, resembling the Assyrian god, Nisroch.

The acquisitions of Greek and Roman Antiquities by Mr. C. T. Newton comprise additional fragments of the frieze of the Parthenon; a sepulchral relief in marble, representing a banquet-scene, in which a male figure reclines on a couch, and a female is sitting feeding a snake coiled round a tree; and a marble statue of a boy extracting a thorn from his foot,—a most rare and interesting work of the realistic school of Greek sculpture which flourished about B.C. 200. This statue was found on the Esquiline Hill at Rome, and formerly belonged to Monsignor Merode, from whom it passed to M. Alessandro Castellani, through whom many antiquities have been obtained for the Museum. Excavations in Cyprus, made famous by the successful diggings of General di Cesnola and his brother Major di Cesnola, have contributed *fiducia*, bronzes, inscriptions, statuettes, beads, mirrors, and miscellaneous implements from sites at Aradippo, Bamboula, near Larnaka, Amathus, and Limesol.

The Department of British and Medieval Antiquities and Ethnography has witnessed the introduction of the larger specimens of prehistoric antiquities from the Christy collection, and considerable rearrangements in consequence of the increased area now at the service of the department. The Rev. W. Greenwell, whose gift of an extensive, indeed unparalleled, collection of early remains excavated by him in British barrows we noticed last year, has presented some further additions recently obtained by him from barrows near Lambourne, in Berkshire; among them is a remarkable axe of stag's horn, and a fine pierced axe of stone. Cinerary urns from Dorsetshire, Suffolk, and Lancashire; a barrow urn from West Tanfield, Yorkshire; and a plain urn from Toddington, Bedfordshire; a hoard of bronze implements found in the parish of Meldreth, county Cambridge; numerous late Celtic antiquities; miscellaneous bronzes from foreign countries; the centre of a Roman mosaic pavement, found in 1803 in Leadenhall-street, near the old East India House, representing Bacchus riding on a

panther; portions of two bronze tablets recording military privileges granted to soldiers who had served in Britain under Papirius, a hitherto unrecorded Prefect,—by Antoninus Pius in the year 146, found at Cilurnum, or Chesters; a collection of antiquities found at Longbridge, near Warwick, by Mr. J. Staunton; a remarkable hoard of silver objects, found in 1774, at Trehiddle, near St. Austell, Cornwall, with numerous coins, consisting of a cup or chalices, a chain with knots supposed to be a penitentiary *disciplinarium*, and various ornaments, to which a date coeval with the reign of Alfred the Great, about A.D. 875, has been reasonably assigned; and a marble bust of John Churchill, the celebrated Duke of Marlborough, by M. Rysbrack, make up the most important additions to the ever-increasing treasures of this attractive section of Museum subjects.

The antiquities transferred from the India Museum consist of (1) sculptures from North Afghanistan, exhibiting a style of art strongly influenced by Classic feeling, and derived at some unknown period in all probability from Bactrian schools of art; (2) sculptures from the great Buddhistic tops, at Amaravati, in the centre of India, partially excavated by Colonel C. Mackenzie, in 1816-7, and further exhumed in 1845, by Sir Walter Elliot. The material of which they are composed is a kind of limestone or marble, very liable to decay, and the sculptures have suffered much under the various vicissitudes to which they have been exposed. Still they afford a most remarkable illustration of the art of the period to which they belong, and form a rich treasury of Buddhist iconography; and the wheel-shaped bosses or roundels are of excessively beautiful design. Among the subjects selected by the sculptors are numerous representations of episodes in the life of Gautama Buddha, as well as of his previous births; (3) a portion of Mr. C. Masson's collection of stœleite relics from the tops of Afghanistan, belonging in point of date to the early centuries of the Christian era; (4) copies of paintings found on the walls of the celebrated Buddhist caves at Ajanta, situated to the northeast of Bombay.

The Christy collection, of which a further portion has been removed to the Museum, has received donations of prehistoric antiquities from Suffolk, Yorkshire, Spain, Italy, Sicily, and Asia Minor; collections of arms, dresses, and personal ornaments obtained during the Zulu war; rare clubs from the Oceanian and Australasian islands; and ethnographic specimens from America. The trustees of the Christy collection have purchased also, from funds at their disposal, a valuable series of weapons, dresses, and other objects used by the Malays and Dyaks, in Borneo, Sumatra, Java, and Celebes, collected in those regions by Mr. Carl Bock during his recent travels there.

The Coin Department announces the acquisition of several fine Greek types, among them a remarkable medal struck by Agathocles, king of Bactria, in honour and memory of Alexander the Great. It has received also a series of military medals issued by the East India Company and by the Indian Government.

The Departments of Natural History, whose head quarters must now and for the future be sought some three or four miles further to the west than their old home at Bloomsbury, although still under the same conditions of management and superintendence, have been busy at work in facilitating works in progress for providing additional spaces for the antiquities, which have necessitated the removal of books, documents, and specimens to temporary positions; nevertheless, opportunities have been taken of adding new and interesting specimens to the zoological series still open to the public at the British Museum, as, for example, in the stuffed and mounted specimens of the sealion, and in that of the Californian masked wolf. The exhibited heads, preserved in spirits, of the adult male and female of the Orang-Utan of Borneo afford, Professor Owen tells us, striking exemplification (imperfectly given in dry and stuffed specimens), of the strange physiognomy and strongly-marked sexual distinctions of that species of large anthropoid ape. In the Zoological Department complete study-sets of the collections of terrestrial mammals, birds, ostracoda, corals, &c., made during the voyage of H.M.S. *Challenger*, have been deposited, in pursuance of the order of the Lords Commissioners of the Treasury. A fine collection of marine crustaceans, including a set of fish-parasites, has been added. Human crania of

the stone age; rare mammals; birds from many remote lands, collected by Dr. Bradshaw in the Zambesi country, Mr. Blanford in Sikhim, Mr. Bourdillon in Travancore, Dr. Book in Sumatra, Mr. Layard in New Britain, and Lieut. Richards in the Solomon Islands; reptiles and amphibians of equal rarity and equally distant places; fish, molluscs, crustacea, and arachnids, the latter including a specimen of the rare and interesting hunting-spider from Afghanistan, and a new genus of the humped spider from Madagascar, have also been received into the cabinets. Of the insects alone upwards of fifteen thousand separate specimens have been obtained from places too numerous to mention here, by the indefatigable zeal of scientific explorers and learned travellers. The work carried on by the staff of the Geological Department has been of an exceptional and peculiarly arduous nature by reason of the removal of which we have already taken notice. And the task of re-arrangement is now, and has been for several months, in active progress, most of the large specimens being placed, and many of the new galleries temporarily utilised for the display of fossils. To this department have been added many remains from British formations, including part of a *Plesiosaurus* from the Lower Lias, Denton, Lincolnshire, and of the *Cheropotamus Cuvieri* from the Lower Eocene formation at Seaford, in the Isle of Wight; while excavations by Major Tovey, R.E., at Edmundesee, near Waltham Abbey, have brought remains of *Hos Longifrons*, and of the horse, pig, goat, and dog species. An entire skeleton of a new and remarkably small species of *Dinornis* from New Zealand in a singularly perfect state of preservation, is perhaps the most valuable acquisition in its own proper class. The London clay of Sheppey, Whitby, Hastings, Dover, and many other fertile British sites, have contributed their share of wonders of the antediluvian ages to the shelves of the new building at South Kensington.

The scientific catalogue of the Mineral Department has not, we are informed, progressed with great rapidity during the past year; ever since this important task was begun, the dependence on Bloomsbury daylight for purposes of crystal measurement has been, especially during the winter months, a serious hindrance to the satisfactory investigation of the exact forms of the crystals; and this will be more easily understood when we remember that the angles of a crystal,—and hence its symmetry,—are determined by help of the reflections of a signal from the various faces, and that unless the signal be very bright the position of its image as seen in a small crystal-face is not susceptible of accurate observation. Mr. Fletcher hopes, however, that the daylight of Kensington, and the artificial light which will soon be available for scientific purposes, will conduce in no small degree to the advancement of this portion of the work. On the other hand, the available energy of the Department has been concentrated during the latter part of the year upon the removal of the contents of the Old Gallery at the British Museum to the New Gallery at South Kensington. This transportation has been effected almost absolutely without damage to the specimens, from the most delicate of which scarcely a crystal has been disturbed during the transit. As arranged in the old gallery, the specimens illustrating species and varieties were exposed to visitors in the tops of table cases. These have been left behind, while the pedestals have been transferred and built up into larger cases, for which new tops have been made, and in them are now displayed all the minerals formerly exhibited, supplemented where necessary by specimens from the drawers. This collection, probably the finest in the world, has been for the last two months available for students, every specimen being accompanied by a descriptive label. The glazed ends of the cases are gradually being provided with requisite fittings to accommodate the larger crystals. It is expected that this work will be completed within a few weeks. Among the acquisitions in this division of the Museum are a large group of lenticular crystals of selenite, inclosing sand, from the neighbourhood of the second Pyramid of Egypt, which has been presented by Professor Owen; a large piece of the meteorite which fell at Estherville, in Emmet County, Iowa, U.S.A., on the 10th of May, 1879, weighing 268 lb.; and a meteorite stone, weighing 3 oz. 8 gr., which fell in the Bois de la Fontaine, near Mung, in Loiret, in 1825.

The ordinary work of the Department of Botany was, in like manner, interrupted by preparations

for, and commencement of, the removal of the collections to the New Museum. The Herbarium, however, was accessible to students throughout, with the exception of the time actually taken up in the passage from one building to the other. To this Herbarium numerous additions have been made from the usual sources, to which scientific travellers so frequently and so liberally contribute. To the British division have been added a large collection of the plants of Oxfordshire, formed by the late Mr. Alfred French, and consisting of 2,482 specimens; and the important set of Lichens, formed by Mr. W. Joshua, containing 976 species in 1,500 labelled specimens.

The Department of Prints and Drawings has done good service to art by the completion of the fourth volume of the Catalogue of Satirical Prints, containing upwards of 1,400 satires from 1761 to 1770. A second volume of the Catalogue of Early German and Flemish Prints is in hand. Among the purchases and gifts are many rare and unique examples of the various modes in vogue for illustrations; the principal purchase being that to which we have already alluded, the extensive collection of maps, plans, and views of London, formed by the late Mr. Frederick Grace, consisting of nearly 6,000 prints and drawings, two volumes of maps, and one volume of Frost-Fairs on the Thames. The gradual growth of the City is thus shown in a remarkably perfect manner by the maps, which commence with Vortice's copy of that by R. Aggas in 1560, and continue without a break to the present day. Among the drawings are numerous examples of the works of P. & T. Sandby, W. Capon, E. B. Schnebelle, Major Yates, J. Buckler, and J. H. Shepherd, which are of great artistic merit. The last-named draughtsman was employed by Mr. Grace in making water-colour drawings of old buildings and streets in the City expressly for this collection.

The past year has been, therefore, as we see by the above notice of a few of the principal events, one pre-eminently of advancement. Not only have the acquisitions throughout every section been of a high order of excellence and exceedingly numerous, but the methods of display, the opportunity of re-arrangement, and the increased facility given to the public of inspecting these acquisitions have all operated towards the attainment of the chief aim of the present administrator, which is, undoubtedly, to bring before the visitor, whether highly or moderately interested in what is before him, the importance of the British Museum collections as a means of education and mental advancement, second to none in potentiality and attractive influence over the æsthetic feelings with which we are now as a nation becoming imbued.

#### CONFERENCES, FRENCH AND ENGLISH.

We have often remarked that our neighbours across the Channel are exceedingly deliberate in the publication of such things as reports of the transactions of societies of any kind. They do that kind of thing very thoroughly, when it is done, but they certainly take time about it. Hence it occurs that the full authorised report of the International Conference or Congress of Architects, held at Paris in 1878, only reached us a few weeks ago, not until after we have already had the contemporary journalistic reports of another recent congress there of similar kind. Nevertheless, the report of the "Congrès International des Architectes" of 1878, reaching us almost at the time when our own last architectural conference was being held in London, need not be regarded entirely as *passé* in its interest. On the contrary, it has come just at the moment when it seems naturally to suggest some little comparison between the recent conference in London and the way they manage these matters in France.

The French have always been characterised by the importance they have attached to ideas and ideals as the basis of practical work in all important subjects, from politics and sociology downwards. The presence of this element of the idea in the report of the proceedings of the French congress is what especially strikes us in comparing these proceedings with those, not to be published in the same form, of the recent conference in London. Our conference planned itself on being eminently a practical one, and may be said to have been so, in its method and choice of subjects. But it was certainly somewhat restricted in its interests. Details of

professional business occupied the greater portion of its time and interest, and the artistic elements of architecture, and the wider interests of the subject, as a whole, were not touched upon this time at all. The artistic element, in fact, was only represented by the contribution of papers on fresco-painting, by two painters, and these cannot strictly be regarded as architectural subjects, and were not treated by architects.

The French congress had its debate on professional business also, and a tolerably lively one, as the detailed report now shows us, the subject having been the consideration of a tariff of charges. One or two points in this discussion, now for the first time given us in full, may be worth a note before we quit the subject. But the business part of architecture did not occupy anything like so large a proportion of the time of the meeting as at our recent meeting. And what did occupy a considerable part of the time is as significant as what did not. The French architects are not afraid of being stigmatised as impractical if they give some thought and consideration to the subject in its widest aspect. Accordingly, we find one of the first papers read was one by M. Achille Hermant on "Esthetics brought Home to Every One" ("L'Esthétique mise à la Portée de tout le Monde"). Another paper, the largest and most important that was read, was on the general consideration of the nature of an architect's profession, its position in regard to engineering and to contemporary professions generally, and the nature of the training and education which an architect should go through. This paper amounts, indeed, to nothing less than an attempt to define the architect and his work on a basis of first principles. Akin to this was another paper especially considering "architects and engineers," and the distinct character of their labours and the places they take in the economy of society. Then there are two papers on the reorganisation of the "personnel du bâtiment,"—one in regard to the education of artisans for their craft, and the other a report in regard to the organisation of building artisans "au point de vue moral et matériel." These are, in some measure, "practical" subjects only, but practical subjects of very wide interest indeed. Then we have a critical paper on the architectural designs in the *Salon* of the year, and we come on a discussion elsewhere as to the principles on which architectural societies should be framed and should guide their action.

Now, if we compare all this with the proceedings at the recent Conference in London, we certainly must admit that there is a very great contrast in regard to the breadth of view of the two meetings, and that there is something more important, more dignified, and which impresses one as more worth discussion, in this list of subjects, abstract and ideal as some of them are, than in the endless hair-splitting about quantities and quantity-surveyors which filled such pages of the journalistic reports of the London Conference, and in which so much time and so many words were expended over a mere business detail, the real point of which most of the discussionists failed to grasp after all, and which has nothing to do with the subject of architecture proper. Having pointed out this contrast and drawn the moral from it, we do not propose to say anything more on the well-worn subject of the recent Conference and its discussions. But as the report of the French Congress, though so far behind time (and it is really a pity our neighbours cannot remedy this dilatory habit of publication), comes to us in some degree as a new publication in relation to architecture, we do not see why we should not treat it accordingly and say a word as to one or two of the views advanced in it.

The point of the essay before referred to, on "esthetics brought home to every one," is in the endeavour of the author to remove from the class of considerations usually defined as "aesthetic" the idea that they involve a kind of "mystery" only to be comprehended by an initiated few: to represent the idea of aesthetic studies as simply the study of the meaning and conditions of artistic works, in order to acquire the power of correctly judging of and understanding such works. It is represented that people are repelled from the study of art (as distinct from the practice of it) by a mere word which has come into use in modern times for convenience's sake, the meaning of which is quite simple and straightforward, although it has got to be regarded with a kind of superstitious awe. So far from aesthetics

being essentially a study for an exotic circle, M. Hermant urges that it is precisely artists who do not require to study aesthetics (we are not quite prepared to agree with this), since they are occupied not in forming judgments on art, but in producing art. It is the mass of people who are not artists whose office it is to judge of and to enjoy art. But they, as a rule, get no training to enable them to do this; the working-classes especially are left to find out any how, if they try to find out at all, what is the meaning of art. M. Hermant thinks not only that aesthetics, in the sense which signifies the power of judging of art, is a study which may be made practical, but that it may be made a practical one for all classes, in elementary as well as in higher education, as far as elementary education goes. Twenty years ago the author of the essay in question made the complaint in print, that, "in relation to art, public instruction is entirely dumb, so much so that it would be impossible to find any one anywhere capable of understanding art, appreciating it, or speaking of it with intelligence, if a desire to know its beauties, a certain inward tendency towards works of imagination, an instinctive feeling of the grandeur of the creations of genius, did not lead people who are endowed with these feelings to search out for themselves that which no one has endeavoured to teach them." In our own country this was universally so until a very recent period, and it was a complaint sometimes that a man at our universities might learn very thoroughly to appreciate the style and the beauties of authors of ancient times, but that he might go through his university career, and go through it with honour, without knowing a single fact about the great arts of architecture, sculpture, and painting, or gaining the slightest power of forming a judgment of the merits or interest of such works. The foundation of art professorships at the universities has brought the possibility at least of artistic teaching there, though we believe it is still no necessary part of the curriculum; but in our schools we believe anything like instruction about art, beyond lessons in drawing (generally very meagre), is almost entirely absent. Into the ideas about the science of aesthetics which are promulgated in M. Hermant's essay we cannot enter now,—to consider them at all fully would occupy too much space; but the main idea laid down in the essay, that works of art are not rightly understood without special mental training, that such training might and should be a part of general education and is notably absent from it, is as true unfortunately for our country as for France. In both countries, in ours especially, such training would probably be regarded by "practical" men as impractical, and as a kind of beating the air. We have to get rid of this idea; to see that instruction in art may be just as well given as instruction in moral philosophy, and that the one is no more a mysterious and vague study than the other, perhaps rather less so; and that conviction may possibly pave the way to make "aesthetics," which is simply the power of understanding and perceiving right about art, a part of general education. If that is ever brought about, then, and not till then, we may see crowds going about in exhibitions and looking at works of art with the understanding as well as with the eyes, instead of hearing, as we now do at every turn in the annual Academy exhibitions, remarks which argue an utter want of power to understand the merits of a picture, or even of any perception as to what pictures are painted for.

The paper by M. Daviond on architects and engineers touches on a subject to which we have several times given some special consideration. Some of his conclusions in regard to the state of the profession in France are more similar to those which have sometimes been expressed in regard to the condition of English architecture than would have been expected. M. Daviond divides the architects of France into three classes: (1) those who are true artists and of unquestioned talent, and an honour to the profession; (2) those who, with a very good will to attain the front rank, are deficient in special aptitude, but who become, nevertheless, useful and enlightened in regard to practical domestic architecture; (3) those who may be called "usurpaters," who have never made any serious study of architecture, but who have been sufficiently familiarised with building operations to keep up appearances and to claim 5 per cent. for what they carry out, on the same terms as the more able architects. On this point of the 5 per cent.

it seems from other pages of the report that M. Daviond entertains very strong opinions, considering that the existence of this tariff, and the system on which it is calculated, are most injurious to the status of the profession, and that it should be free to every architect to name his own price for what he undertakes, just as a painter does with a picture. If architecture is regarded as an art, and M. Daviond strongly emphasises the artistic side of it, this conclusion seems inevitable. In many practices it is so much mingled with what is purely business, that the argument can hardly apply. In regard to the relation between architects and engineers, M. Daviond seems to have thought that their increased employment of iron in building of all kinds will tend to assimilate the professions more; but he does not prophesy much good to the architects from closer contact with the engineers. Of the ability and learning of French engineers he speaks, as every one must, with the highest respect, but their critic in this case affirms that they work under conditions utterly inimical to anything like artistic feeling. Being so largely occupied under Government, and under the rule of a central official engineering head, they form a kind of *embrigadement*, who carry out work on a fixed type, to the especial glory of the department "des Ponts et Chaussées"; or, as we might say, for the satisfaction of the Board of Works. The influence of such formulated officialism is always fatal to the individual freedom which is a necessary condition for producing anything worth calling art. At the same time, M. Daviond has placed on record his opinion that the architect of the present day has much to contend against in consequence of superficial instruction in regard to the scientific and administrative sides of his profession, and furthermore in consequence of the want of cohesion among members of the profession themselves. This latter failing appears, then, to be one characteristic of the profession in other countries besides England. The engineers have always shown a strong *esprit de corps*; the architects always seem to want that. We had been rather under the impression that this was a peculiarly-marked characteristic of the profession in England. It seems to be otherwise. It may not be a very philosophical source of consolation to find that others are as bad as ourselves, but it is a sort of consolation for all that.

The very important and seriously-reasoned paper on the professional education of an architect, by M. Trélat, belongs to the same class of subject, and, in fact, touches again on the same question, the relation between the architect and that "personnage récent," the engineer. The director of the "École spéciale de l'Architecture" distinguishes very precisely between architect and engineer; he sees a strong line of demarcation between them. The engineer has no concern with form, his only aim is to secure the maximum of stability with the minimum of material: "Il mesure tout ce qu'on demande, et il dessine tout ce qu'il a mesuré." The architect is concerned to give to such structure also unity of form and expression, which to the engineer are nothing. The position of the two professions being in this sense so opposed, M. Trélat urges that their respective fields of education and of practice should be more strictly defined and adhered to. The engineer requires a specially technical education, with the architect "il faut d'abord soigner et développer l'artiste." The architect is a constructor certainly, but a constructor "tout à fait spécial." When he constructs it is not permitted to him to be exclusively occupied about the resistance, stability, and permanence of his work. More precious considerations turn his attention imperiously towards the ultimate form of his work. But the realisation of that form demands in the majority of cases a much larger quantity of materials than mere stability and permanence call for. He is thus not tied down rigidly to the conditions of merely practical requirements. The way in which M. Trélat sums up this is so very bold and so very candid, that we will translate his succeeding paragraph as it stands:—

"From the day when you make of the architect a man who will work out equations of stability and of resistance for every element of his building, from that day you will have no longer an architect; the artist will be dead, the engineer alone will remain. But the method of construction of the architect is a very well-known and very ancient one. It is the empirical method. You know what empiricism is. Experience, without theory. As long as the field

for the application of this method is not continually assuming new aspects, as long as experience is ample, empiricism is sufficient. Observe, that these are the general conditions" (constructionally) "of architectural work; and that explains the love and fidelity of the architect towards empirical methods. The man who has a high feeling for Form, who knows well that this is always the last word he should write, the last supreme impression which should be given by his work, finds in the very simplicity of empirical conditions the liberty to fulfil without distractions his rôle of artist and to carry out construction under normal conditions. I do not deny that the architect will encounter sometimes exceptional circumstances, unexpected problems and conditions; for everything is renewing itself under our eyes, society is making fresh evolutions unceasingly. The buildings necessary yesterday are not those necessary to-day. We see now buildings which, instead of consisting of masses of piers, seem rather to consist of openings. I know well that one must, under such conditions, appropriate the materials to new problems, and that the construction must lose its simplicity. There is no doubt that in these particular cases, the science of the engineer is a necessity. But it is precisely at this point that the engineer intervenes. The engineer is the man of new edifices, the man of constructions unknown yesterday, the man of bold and conclusive experiences. It is when he has given his sanction to the methods imposed by the necessities of the time, when they are reduced to empiricism, that the architect adopts them."

This is a remarkably bold and candid way of putting the matter, and is not our way; yet there is some truth in it, and it tallies, moreover, with what may be said to be the general relation of science and art in successive development.

There is much more in the volume of the Congrès International of 1873 which is interesting by reason of reading, both when it accords with and when it differs from current opinion on similar professional subjects in England.

#### EXHIBITION OF SPANISH AND PORTUGUESE ORNAMENTAL ART AT SOUTH KENSINGTON.

SOME will doubt the wisdom of the Science and Art Department in selecting Spain and Portugal in their first endeavour to induce foreign Governments and foreign nations to combine with them and get up an exhibition of some one national art, or group of national arts. It is, indeed, a question whether Spain or Portugal had at any period of their history any art which deserved the name of national. Conquered or conquerors, they were either harried slaves of a dominant alien race, or the proud rulers of peoples who hated them. Neither of these phases of national life is favourable to the cultivation of the arts, which have always flourished most where Freedom has made her home, and she has hardly ever domiciled herself in the Iberian peninsula. Spain did not make her art: she stole it ready-made. In her earlier history that she had she obtained from the Moors. In her later she stole it from the Flemings. The art of Portugal is equally alien, and derived from that furtherest Ind Vasco de Gama led the way to. It is difficult, then, to discover a reason why Spain and Portugal,—the mere camp-followers of the arts,—should be thus selected to lead the van. Perhaps the reason for the selection may be found in the fact that the Museum already possesses a very large collection of so-called Iberian art, and the indefatigable collector of the greater part of it has more he desires it to possess. How rich the Museum already is in Spanish and Portuguese objects is shown by the fact that out of the somewhat more than 1,500 entries in the catalogue of this special exhibition, nearly 900 are already the property of the nation. The conjoined countries, indeed, add barely 250 to the tale; and of the remainder, 270 are lent by English collectors,—the most part of which were derived from that same source which has so largely enriched the Museum and their importer. From the French collectors and dealers come nearly 200 objects; so that it will be seen that the Governments sought to be interested are almost the smallest contributors to this gathering.

Still, what comes to us from foreign sources and from the private stores of our English amateurs is well worth noting. To note those

things belonging to the Museum would be a work of supererogation, inasmuch as "the Department" has already published a hand-book catalogue, and a history of Spanish art, all having special reference to its own possessions. Our notes will therefore be, for the most part, confined to those examples which are here on loan.

The first impression we receive on entering the gallery is that Spain and Portugal were pre-eminently remarkable for their works in metal, for the collection is large and important, both in works in precious metals and in iron. Indeed, the Moors, who created the metallic arts in Spain, never found in all their wandering such fine iron as that country produced and yet produces. This they converted into the purest steel, and tempered to the hardest and yet the most elastic pitch, until Toledo blades became a synonym for perfection. They chased and inlaid it with precious metals, impressing the art and name of their loved Damascus upon it until, wherever it may be done, Damascusing yet recalls that Mauresque process they carried to such perfection in Toledo, where the art yet lingers, and whence comes the finest workmanship in this branch of art the world now produces. All this founded a good school of blacksmiths, and in the South of Spain,—indeed, wherever Moorish influence made itself felt,—the ironworker's craft to this day predominates. Unfortunately, we have hardly anything of early character in ironwork exhibited, but of sixteenth and seventeenth century work there are some notable examples. The large screen which half spans the gallery, and which came from Avila Cathedral, is an admirable bit of Renaissance design, and an excellent piece of *repoussage*. It is three bays in length, each containing seven long circular baluster-like uprights, which are bounded by square pilasters, whose faces are covered with *repoussé* plaques of exceedingly simple but very effective design. But though the handicraft of this is Spanish, the design is that of "Joan Frances maestra mayor de las obras de fierro," so that even a foreigner had yet to direct them in their metal work. Akin to this is an admirably-designed processional cross, in *repoussé* iron,—one bearing mortuary emblems, and used in funeral processions, and which now belongs to the National Archaeological Museum at Madrid. It will be found in the cases just southward of the screen. It is numbered 3 in the catalogue, but as the numbers crop up in all sorts of places, or are at present omitted altogether, excepting in those works lent by the Governments of, and collectors in Spain and Portugal, it is not much use quoting the numbers without indicating where they may be found. But it is worth seeking for to notice the admirable contour of the knob and its clever construction. The candelabra which stand in close contiguity are good examples of simple beaten work, but it will be remarked how little part pure forging, such as we find in the ironwork of almost every other country of Europe, plays in the ironwork of Spain. Iron was treated there in the same fashion as the more ductile metals, such as copper, and the first instinct seems to have been to hammer it into a plate and then make the best they could out of it. In this the Eastern sentiment is patent; it could all be done with light and little tools, and chiefly wrought in its cold state. When we examine the works in steel we shall find the same industrial sentiment predominating. The chisel and the file, tools used on the cold metal, and with which the workman could sit whilst using, have left their trace more strongly than the hammer; and the ethnology of the art of Spain, as shown in her ironwork, is decidedly Eastern. The highest triumph of the work in base metals is, however, seen in the arms, and at the further end of the court will be found three suits of half-armor, made for Philip III., who drove away that artistic race, the Moors, whose sojourn in his kingdom had rendered such gorgeous apparel possible to him. Two of these are evidently the work of the same craftsmen, and are beautifully ornamented with heraldic insignia, and trophies of arms enclosed in a lattice work of delicate foliage, and are as fine as anything wrought during the latter part of the sixteenth and early years of the seventeenth century which exists in any country. The Royal Armoury at Madrid is indeed the richest storehouse in Europe, and we regret we have so little from it. At Paris, in the Retrospective Museum, formed at the Exhibition of 1878, it was lavish of its treasures: so we had hoped that we should have seen more of them in London. There is one

case of five locks which will interest our readers the architectural front of one of them being of singular purity of design and refinement of proportion. Unfortunately, the mechanical construction is not visible, but it is doubtless of wonderful ingenuity, for even in the arrangement of their wooden locks the Eastern races exhibit a cunningness which would put to shame the 'cutest American. In purely chiselled steel, the steelyard from the National Archaeological Museum at Madrid, the work of Maestro Salinas at the end of the sixteenth century, is a remarkable example of skill and design, but is eclipsed by a plaque of chiselled work, veritable sculpture in steel, which belongs to M. Spitzer, of Paris; it bears the arms of Charles V., surmounted by the Imperial crown, and is cut from a solid block of steel, being probably the *pièce de maîtrise* of a Spanish armourer who thus proved himself worthy of admission to the Guild of his craft.

Of the works in precious metals, the most abundant,—indeed, well-nigh all,—are ecclesiastical, and though these are of very great technical merit, yet the very fact that they are ecclesiastical impresses upon them a certain rigidity of design, which prevents their having any national characteristic. Most of them are exceedingly German in their type; for, of course, the Moorish element did not imprint itself very much on the Church's work. The Portuguese chalices are interesting as retaining the early Byzantine shape of the hemispherical bowl seated directly on a globular knob, without the intervention of an upper stem, down to a much later period than any other European Church; but, as a rule, the Church plate does not present any generic difference to that of the other parts of Europe. Its specific variation will be found admirably descanted on in the Baron Davillier's excellent "*Recherches sur l'Orfèvrerie en Espagne*." The Baron is a large contributor, sending some fifty examples of Spanish art, many of which were collected by Fortuny, the regenerator of the pictorial art of his country; for the Baron Davillier was that artist's executor and biographer, and acquired many of the finest specimens he had collected.

Of sculpture we have but little, and with the exception of Alonzo Cano's celebrated statuette of St. Francis d'Assisi, nothing of a very high degree of merit. This statuette is, however, one of wonderful merit. Fervent, tender-hearted, self-sacrificing, poetical, and full of holy thoughts, the character of St. Francis has always presented to the religious artist a psychological study of the greatest interest, but, at the same time, one requiring the utmost refinement in artistic treatment, and very rarely has this refinement been reached. Alonzo Cano did reach it, and in that look of rapt ecstasy which he has here implanted in the face of the saint he achieved the highest sculptural power of expression. It is a strange commentary on the change that has taken place in the religious feeling of Spain that this statuette, which was once jealously guarded from the gaze of even the orthodox, should now be exposed to public view in heretic London, and that instead of being the cherished prize of the canons of the cathedral of Toledo, it should now form part of the collection of a French amateur, M. Charles Stein, of Paris. So rigidly, indeed, was it withheld from view, that a few years ago the Emperor of Brazil was unable to obtain a sight of it when in Spain, and now the poorest visitor to the Museum may enjoy and wonder at this most noble work. This calm rigid figure, simply vested in the friar's brown frock, which hangs with the meagrest folds about his attenuated form, seeks by no trick of art to arrest attention,—the very hands and feet, stigmata pierced, are hidden. No grace of pose is here, nothing to appeal to our senses; only our souls are touched by that upward gaze of the servant who, like his Master, was a man of sorrows and acquainted with grief. It is hard to turn away from that extatic face, and one finds oneself returning to it again and again, in awe and wonder. There are many other religious figures here, and it is an illustration of the influence of this one, that several copies of it are to be found in this small collection; but this figure of Cano's soars so far beyond all others, that it is somewhat difficult to recognise the good they do possess. All the wooden ones for church purposes are painted like those Flemish figures from which they were borrowed; but the Spaniards painted everything, down to terra-cotta; nor was it until quite late that the naked wood was left, and sculpture, unaided by colour, allowed to tell its

own story. In decorative carving of this latter class, there are some charming examples in drawer-fronts, lent by M. Paul Reoappé, of Paris, in which, on the restricted space thus presented, there is arranged a series of human figures, which almost reach grand art, and which may be from the hand of Berruguete himself. In his style are some other drawer-fronts, lent by M. Ohavet, also of Paris. These elaborately-carved fronts are from the presses of the sacristies, in which the ecclesiastical vestments were kept. Of domestic furniture we have very little. There is a fine cabinet lent by Mr. Odier, of Paris, in which the sculpture is decidedly Flemish, and some fair examples of the Indo-Portuguese style, but nothing of any exceeding merit. This is much to be regretted because in our Charles II.'s time English industrial art received a great impetus from the introduction of this class of furniture which accompanied his wife, Catherine of Braganza, to this country. Of the old Spanish leather we have very little, and Cordova, which gave its name to our "cordwainers," has none of its glories represented. There are two interesting shield-covers: the one of purely Arabic character, and dating from the fifteenth century; the other, a century later and of Christian bearing, but showing how strongly the paynim had impressed his art even on the shield of a prince of the true Faith; and in a cabinet from Mr. Spitzer's collection is some very beautifully tooled leather in the panels; the ground is a deep smalt blue, and the figures are gilt, the lines being engraved or impressed by a sharp fine tool like a graver. The drawing of the youth and the maiden, who stand gazing at each other across the "fountain of love," is a splendid bit of sixteenth-century work,—a work of consummate art. Of embroidery there is no end,—admirable work, too, much of it, though into the intricacies of its detail we cannot now enter; but there is throughout the whole of it a sad lack of any specially artistic quality whereby to distinguish it from the contemporary needlework of France or Flanders. Some little tapestry,—itself a Flemish art,—and some imitative pottery of the last century, from Buen Retiro, show how Spain paid for art, but created it not. Of its true pottery, the Hispano-Moresco, there is a goodly show, but not so fine a one as has before been held in these same galleries, and nothing equalling the late Mr. Henderson's gift to the British Museum. The arts of the East and of the West met in Spain and Portugal, and the hybrid which sprang from their union was sterile. If the true progeny of these two races is to be studied, let the Department turn its attention to that more fruitful land which is watered by the Danube. There in Hungary, in Lower Austria, and in Eastern Russia, a commingling of these two currents will be found, whence new forms, new combinations, and new ideas yet may spring.

#### "LE SALON À LONDRES."

This is rather too pretentious a title to give to the collection of recent French paintings which has been opened in the Galleries at the Leicester-square panorama, but the exhibition really contains some remarkable works, and some which are peculiarly interesting as illustrating certain tendencies of modern French painting, not in all cases good, certainly. Among the works, however, which it is an unalloyed pleasure to see, are the three or four contributions by M. Lefebvre, who has the merit (rather too distinctive a merit among contemporary artists of his country) of painting the nude figure not only with the highest technical finish, but without a *souçon* of vulgarity, and in a spirit that renders the painting really subservient to poetic and imaginative feeling. In this respect his "Pandora," a full-length figure about half life-size, is an exquisitely refined work, not perhaps so remarkable for mere physical beauty of figure as some which he has produced, but equal to any in refinement of painting, and with a lovely and expressive head also. His little work in the upper room, "a bather," is as far removed from the commonplace nudities which generally meet us under that title as anything could be. Admirable also are his two other works, a portrait of "Paul Lefebvre," a little boy with a very piquant face and costume, and "A Cardinal at Prayers" in St. Peter's, where the genuine devotion of the ecclesiastic is humorously contrasted with the perfunctory piety of his

attendants and with the Pagan appearance of the marble Cupid and his wreathed decorations on the pier behind; this architectural portion is also admirably painted. There are other works which, with great talent, exhibit but too impressively the gross realism into which some of the ablest of French painters have fallen. M. Gerôme, who has we believe taken great personal interest in the exhibition, sends his "St. Jerome," which is really a very careful and powerful painting of a nearly naked old man, with all the decay of age in his shrivelled body pitilessly delineated; he lies on his back with his head pillowed on the body of the traditional lion; a halo of light encircles the head. The contrast between this little supernatural incident of the picture and the gross naturalism of the rest is almost comic in effect, but it is a painful and revolting comedy. The same feeling is even more strongly excited by M. Bonnat's "Job," in which we have the grand poetry of the history of Job reduced to the hardest and almost revolting prose. It is a pity to see such power of manipulation expended in a direction so opposed to the highest ends of painting, which surely should be to exalt and quicken our imagination of an ideal and tragic story, not to drag it down into the contemplation of the more revolting side of the supposed facts. There are other works which, neither so remarkable in execution (in some cases) nor so repellent in conception, are well worth attention. M. Meissonier's fine portrait of M. Dumas may be named among these,—a large work for Meissonier, a miniature in relation to the ordinary scale of portraits: needless to say that it is finished almost to perfection in every detail. M. Henner's portrait of "Madame X." and head of "A Sleeping Girl" on the same screen, are very good, and so is M. Robert Fleury's "Une Parisienne," a head and bust of a young lady remarkable for the beautifully soft and real texture of the flesh. Mr. Yellon's painting of "A Helmet" is a splendid piece of still life, and M. Protais has a very good battle-piece entitled "Waiting." The pencil drawings by M. Boulanger, designs for figures in the decoration of the Town-hall of the XIII. arrondissement, Paris, are admirable in their way, and show very fine and delicate drawing. We recommend a visit to the collection.

#### THE "BLACK-AND-WHITE" EXHIBITION.

The fourth exhibition of works in Black and White at the Dudley Gallery is a very good and interesting one,—one of the best that we have seen recently. Some old contributors are very well represented, and some names of more recent repute seem to be steadily rising. M. Leon Lhermitte has for some years been one of the pillars of the exhibition, with his forcible studies in charcoal, and he has seldom sent anything better than his interior of a carpenter's shop, "Le Menuisier" (61). In a medium comparatively rough, and in some senses intractable, M. Lhermitte contrives to produce a great deal of finish in detail as well as broad and powerful effect of light. The expression and modelling of the faces of the two figures in this work are remarkable when the exigencies of the material are considered, and the manner in which a multiplicity of details and accessories are sufficiently made out, and yet kept in subordination to a broad effect of lighting, cannot be too highly praised. In addition to this, the same artist contributes an interior of a similar class, "L'Imprimeur" (99), not quite equal to the former, but very fine in its way; and also a remarkable study of a crowd of persons attending a lecture (apparently) in the "Cour de Philosophie à la Sorbonne" (123), in which the effective and individual treatment of a number of heads all directed towards a common object of interest, is the element of interest in the work.

The top of the room is partly occupied by a very large monochrome study in oil of the "Death of Jacob," by Herr Adolph Fichler, in which the attempt is made to individualise the figures of the twelve patriarchs (life-size) as they hear the last words of Jacob, quoted in full in the catalogue from the 49th chapter of Genesis. This is a work with a good deal of the merely academic excellence of German "high-art" in it,—good work in its way, but not very interesting or striking,—and we rather question the advisability of admitting such very large cartoons into a small exhibition like this, consisting of works the interest of which should be

mainly in the idea expressed and in the manner of setting it forth. Whatever merits there are in this study might just as well have been shown on a much smaller scale, and with more agreeable effect when colour cannot be employed. Beneath this work the end wall is mostly occupied with specimens of book and periodical illustrations, appropriately grouped together as a class. The representation of the progress of this application of art is no doubt a legitimate object of such an exhibition, and there is considerable interest in studying a number of them collectively, and there are some very pretty, and a few striking, designs among them. But on the whole, the study of this part of the exhibition leads to the conclusion that the engagement to furnish illustrations to books has some kind of tendency to clip the wings of fancy and artistic imagination. Few of these works have the artistic interest and power which attach to the best work in other classes of the exhibits.

Among these latter it is always a pleasure to come across the etchings of Mr. J. H. Bradley, of which those exhibited here are chiefly from the neighbourhood of Venice. This artist thoroughly understands what etching can best do, and what are its limitations; all his etchings seem complete as far as the real powers of etching (in landscape) go, and there is never a line too much in them. Among the best in this style are "St. Nicolo del Lido" (22) and "Barano and S. Francesco del deserto" (496); in which latter, however, we may be allowed to observe that the distant campanile is carelessly drawn and out of the perpendicular, and that it might just as well have been straight. We could wish that we did not so often find architecture rather carelessly treated in works of this class. There is a little view of Westminster from the Surrey side by Mr. Arthur Western (478), which is very good in effect, but the Victoria Tower is too narrow in proportion, and the Clock Tower has not the correct outline,—the overhanging of the clock stage is missed. These points are not trifling, because a good deal of the character of the mass of buildings at Westminster depends on the contrast of outline and proportion in the two towers. There are some good works in which architecture is a predominant element; Mr. Brewer has a fine picturesque invention under the title of "The Water-Gate,—a Composition" (570), there is a carefully-drawn view of "The Schöne Brunnen," at Nuremberg, by Mr. H. G. Brantling (21), and an admirable interior "In the Aisles of Chartres" (389) by Mr. A. H. Haig.

Among landscapes (in which term we include sea-pieces) is a large and fine study in charcoal of "Wind-tossed Waves," by Mr. F. Powell. The etchings of Mr. Parrish, who is, if we mistake not, one of the more recent contributors, are all good examples both of etching and of landscape composition; they are very effectively composed without appearing as contrived effects. We can only mention briefly a few more which struck us. Mr. G. F. Glennie's sepia sea-piece, "Calm" (142); Mr. John O'Connor's "Old York-gate, Adelphi" (177), a careful architectural study, not excluding picturesque effect; Mr. Rixon's free and powerful sketch in lamp-black, "A Pool on the Common" (351); M. Courty's brilliant etching after Munkacsy's equally brilliant picture, "Visite à l'Accouchée" (366); Mr. Fortescue's "Woman Sewing," one of the best figure-studies in the room (403); M. Rischitz's "Autumn Evening, Valley of the Tay" (423), where the landscape is seen through a screen of the twigs and sprays of intervening trees; Mr. P. W. Lawson's "Pea-shelling" (442), one of a series of drawings of "The London Poor," and a very good one; M. Gauthier's "Le petit Bras de la Seine pendant la Glaces" (495); Miss Sarah Wadman's "Nellie," a very sweet female head; Mr. Sibley's moonlight scene, charcoal (519); M. Tissot's "First Breeches" (595), an amusing dry-point drawing of a little boy just induced in those *propria quæ maribus* garments; and the Princess of Wales's clever sketch of "Sandringham, Winter" (605). There are many other pleasant bits in the collections. Attention should be given to one or two specimens of the new school of American wood engraving, familiar to many readers through the illustrations of *Scribner's Magazine*; the proof from an engraving, "Winnifred Dyart" (65), by Mr. W. B. Classon, of Boston, is an admirable specimen of what can be done in the way of softness of texture and effect in this too often carelessly-used or misused medium of illustration.

## THE STORING OF POWER: THE NEW BIRTHDAY IN SCIENCE.

WE have more than once called attention to what we regard as the most important problem with respect to the future of mechanical motor power, viz., the transmissibility of what we must still, for want of a more appropriate name, call the electric fluid. Towards the solution of this great problem advance is doubtless being made, although we profess inability to understand how it is that the statements which we have formerly cited as made by Dr. Siemens and by Sir W. Thomson have not yet received that full elucidation which their primary importance demands. But concurrently with efforts to determine the transmissibility of electric force, experiments have been for some time in progress, and that not in one department of philosophical research alone, as to the means of accumulating electricity. Very recently there has appeared in the papers a detailed statement of a degree of success obtained in this respect as to which we have hitherto vainly waited to receive either verification or contradiction.

Great names, it is true, were cited in the account in question. But they were not given in the only manner which would render their weight irresistible, that is as signatures to the statement. That electricity can be accumulated is a fact as long known as the time of Franklin. But the mode in which the accumulation was described as having been effected in the case in question did not commend itself to our ready acceptance. A small box was described as containing a sort of voltaic pile, composed of lead, minium, and an acidulated tissue or membrane separating the two. As minium is red lead, and as the use of the acidulated diaphragm has hitherto been, not for the storing up, but for the excitement, of electricity, we have doubted how far the account to which we refer, even if anything but a hoax, could have been quite accurate. At last, however, and, by a remarkable coincidence, on the very centenary of the birthday of Stephenson, Sir W. Thomson has admitted the truth of the main statement as to the transmission to Edinburgh from Paris of a box containing four Faure batteries, composed of lead and peroxide of lead, in which electric force was stored to the amount of a million of foot pounds.

Silk, to a slight degree, and glass, to a very high degree, are the substances to which we have been accustomed to look as containers, or non-conductors, of electricity. In the Leyden jar, the inner metallic lining of the jar is charged with a certain dose of electricity, the presence of which, by induction, is thought to cause the exercise of a corresponding tension, of an opposite nature, in the external coating. A considerable part of the jar, as is well known, is not coated at all, so as to prevent the approach of the inner and outer coats within a distance for which the electric spark might be able to leap, the tension being determined. It seems to us extremely probable that a series of concentric Leyden jars might be so arranged as to hold a tremendous charge of electricity, which might, no doubt, be as readily produced by a dynamo-machine as by a galvanic battery. An accumulation of this nature, composed, not of jars, but of plates, is indeed well known to the physicist. It may not be so generally known that it has occurred that the charge has made its way through the glass, boring or fusing a hole in plate after plate, and thus automatically discharging a portion of the battery, and weakening the final effect of the remainder.

Accumulation of electricity, no doubt, takes place in the masses of floating vapour visible to us as clouds. The whole of the phenomena of the thunder-storm, which are by no means absolutely or even generally understood, are due to the accumulation of meteoric or atmospheric electricity in these vapours. But in this case there is ample space for repulsive as well as for attractive action; and even if we could produce, as is quite conceivable, clouds of steam, and charge them with dynamo-electricity, space would fail us to carry out any useful experiments. How far the division of vapours, in turn positively and negatively charged, by glass diaphragms, can answer, has not, so far as we are aware, been tried. But, as far as we are aware, there is far more difficulty in what we may call wire-drawing the electricity,—that is to say, making a suitable use of a volume of electricity of the highest tension,—than there is in either producing or storing up such a volume.

All previous speculations on this great physical problem, however, controlled by the announcement now made by Sir W. Thomson. Of course it is easy to over-state what has been actually done, and what may be its immediate effects. Thus when a contemporary which is nearly alone among the morning papers in the fact that it speaks of scientific subjects with somewhat of the knowledge of the expert, says, "All the feverish excitement over the division of the electric current may now be set at rest," it mixes up entirely different questions and so far invalidates its own claims to attention. We do not think that the transmission of electricity, so to speak, by parcels delivery, is likely to be the form in which transmission will hereafter meet conveniently and most economically be effected. It is rather as a proof of the command of accumulative power, than as the inauguration of a new method, that we ourselves regard the successful experience of M. Camille Faure. No doubt there are many cases to which such a moveable battery could be applied with the greatest advantage, provided it can be safely tapped, so to speak; as to which we have as yet heard nothing. The inconvenience of the Leyden battery is the instantaneous character of its discharge. This, we conclude, is modified in the *pila secondaire* of M. Faure, but we are as yet without distinct information on the subject. For a subaqueous railway, for example, such a portable boiler, to be applied to the locomotive, would be no small boon.

But even in such a case as this, it seems that we are making rapid advances towards a more perfect mode of transmission through metallic conductors. We hear by telegraph from Berlin that the electric railway between the Lichterfeld Station and the Central Cadet Institution has proved such a success that it has been decided to extend it, first to Teltow, and then to Potsdam. A practical difficulty has arisen as to this line, which is not insuperable, but which was not, so far as we are aware, anticipated. Horses are exposed to danger if they cross the rail that serves as electrode. Their iron shoes, no doubt, place them in the greatest peril. A horse fell the other day in Berlin from stepping upon the rail while the current was in circulation, and another was so much alarmed by the shock he received as to run away. The rails will have thus to be provided with wooden or other guards, to prevent contact except in the mode provided for the use of the line.

We have not doubted, and we do not doubt, that the substitution of the electric motor force for that of steam is merely a question of the accumulation and transmission of electricity. To this we ought to add, and of the distribution, division, or wire-drawing of the accumulated force. It seems to us that M. Faure has placed the first of these problems beyond the reach of doubt. What he has done opens up a great future. The second problem is now in course of solution at Berlin; and the third has recently received much illustration by what is called the Maxim system of electric lights. The three requisites go hand-in-hand. So far from advance in one of them rendering that in another unnecessary, it heightens its value. Thus, supposing the problems of accumulation and distribution to be satisfactorily solved, the minor powers of nature may be pressed into the ready service of man. A tiny streamlet, the current of air in a lofty chimney, even the wind that blows over the roofs of our houses, may be bidden silently and unobtrusively to work tiny dynamic machines, storing up the power till it is required. It is far rather thus, than by transmission in a box, that we think M. Faure's accumulating pile is likely to become most practically useful.

And George Stephenson! Is his massive and national memory to be jostled aside by the names of Faure, of Siemens, of Armstrong, of Thomson? Most assuredly not. No more than the memory of William the Conqueror has been obliterated by that of the long line of his descendants who have mounted his throne, and kept the kingdom, though after a time they lost his dukedom.

"Thy hair,  
Thou other gold-bound brow, is like the first,  
A third is like the fourth."  
A seventh I, I'll see no more,  
And yet the eighth appears, who bears a glass  
Which shows me many more; and some I see  
That two-fold balls and treble sceptres carry."

Of this long and noble line, that of the kings of science and of industry, George Stephenson is not the first. But he comes very early in the series. Immediately preceded, perhaps, only by James Watt, his earlier predecessors were

Pascal, Galileo, Archimedes, the engineer of Lake Moris, the first builders of the pyramids. How far the goody line is to stretch, prediction fails to note. That for the rude guiding staff of the Northumbrian peasant-king will hereafter be substituted the treble sceptre of twice-crowned science, we do not for a moment doubt. But each succeeding name only adds to the splendour of the founder of the dynasty. Without George Stephenson,—and let us add, in affectionate remembrance of the man, without Robert Stephenson,—we should have had no Armstrong, no Siemens, no Thomson. We have told in these pages, from our own personal reminiscences, how the electric telegraph sprang from the railway,—how the need of instantaneous communication between the railway platform at Euston and the engine-room at Camden-town set in organised motion the intelligences which finally matured the needle telegraph. We might, if time allowed, give other proofs of how far the whole great course of physical discovery is bound by golden chains to the footsteps of the first violator of the secrets of nature. But who is there to dispute it? Who is there who, in taking part in the efforts made, and worthily made, in times of peril and of dread like the present, to commemorate the birthday of George Stephenson in the manner which that hardy son of the soil would himself have preferred,—that is, by the establishment of industrial, practical scholarships bearing his name,—is not setting his hand to the creed that declares the immortality of science; and that anticipates in distant years a period in which the mightiest forces of nature shall crouch submissive to the hand of man?

## HOMES AND HAUNTS IN THE MARKET.

COWPER'S HOME AT WESTON UNDERWOOD.

AMONGST the "English shrines" frequented by American pilgrims, few obtain greater honour than the two houses occupied in succession by the poet Cowper at Olney and at Weston; and as the estate of which the latter forms part is now for sale, we paid it a visit the other day in order to behold it with our own eyes, before some great change has passed over it. We were not disappointed.

A journey of little more than an hour and a half by the Midland Railway deposited us with a fellow-pilgrim one bright morning in this June at Olney, a little town on the northern extremity of Buckinghamshire, well known as the abode, a century ago, of John Newton and Cowper, who there composed jointly the "Olney Hymns." A short walk across a meadow and a lane brought us into the High-street, which widens out gradually at the top into a spacious marketplace, the chief features of which are a single elm, carefully raised in, lest its shade should be utilised, and "plump in front" a tall house of red brick, with a triple row of eight windows in front. This was Cowper's home for nearly twenty years. In this we were shown the poet's sitting-room on the left,—now a *magasin de modes*, and filled with ladies' dresses in various stages of progress; on the right is a small parlour, which, we are told, forms part of the entrance-hall, in which Cowper's tame hares would frisk and gambol. In the rear,—now, however, cut off from the house,—are the garden, in which he would walk arm-in-arm with Mrs. Unwin; the house in which he reared his hares; and his own little summer-house, in which he would sit daily for hours and hold sweet converse with Newton and other members of the "Evangelical" school. The summer-house is still kept in precisely the same state in which it was left, and its whitewashed walls are covered from end to end with the autographs of pilgrims from all parts of the world, Hugh Miller, Elihu Burritt, and, we were told, Macaulay among the rest. The house belongs to Mr. W. H. Collisgridge, of London, who has a fine collection of relics of the poet.

But we must hasten on to Weston. We leave on our left the tall spire of Olney Church, in which, we are informed, is the pulpit in which Newton, and Scott the Commentator, used to preach. We next get a glimpse of a stony bridge, of six or eight arches, spanning the river Ouse, and a large expanse of meadows, which must be almost always flooded in the winter. Near this, at Lavendon Mills, was the row of Cowper's favourite trees, and a rustic summer-house, which he has immortalised in verse,—

"The poplars are fall'd, farewell to the shade,  
And the whispering sound of the cool colonnade."  
The bridge, too, lives in Cowper's poems.

Witness the opening lines of his "Winter Evening," in "The Task":—

"Hark! 'tis the twanging horn on yonder bridge,  
That with its wearisome but needful length  
Bestrides the watery flood."

As we bear to the right, to take the road to Weston Underwood, the road gradually rises, and we find ourselves on a little inland cliff, from which we look down upon the Osse in its many pleasant windings among the green meadows. That bend near the little wooden bridge is the spot where Cowper's favourite spaniel, "Beau," jumped into the stream and fetched to his master's feet the lily which is for ever associated with Beau's name in verse.

A long mile of hot, white, dusty road is before us, and we espy straight before us the tower of Weston Church, rising from out of a group of red-tiled cottages and dark-green trees. Between it and ourselves is what seems a large mansion. Our guide tells us that it is only the stables of the old manor-house of the Throgmortons, and that the park close by them, though on the other side of the road, forms the pleasant grounds which the kindness of the Throgmortons threw open to Cowper when his sensitive nature required some such retreat in which to walk, to rest, and to be thankful.

We pass on a quarter of a mile. On our right is a little copse, or, as the natives here call it, a "spiny." It is mostly composed of hazels, and we can scarcely thread the walk through it on account of the thick tangle of the brake on either side, which apparently has been left uncult for many a long year. But this spiny is "sacred ground." It was the scene of, at all events, one picnic, which Cowper dignifies by the name of a *fête champêtre*, in July, 1781, at which Lady Annet, Mrs. Unwin, and the poet were present. He writes:—"A board laid over the top of the wheelbarrow served us for a table; our dining-room was a root-house, covered with moss and ivy." At the upper part of the spiny the hazels give way to fine beeches and yews, and the stile in which the path ends brings us into a meadow, celebrated by Cowper in "The Task" as lying below a cottage, or small farmhouse, known as the "Peasant's Nest." It is thus named by Cowper, who gives a picture of it:—

"Once I went forth, and found, till then unknown,  
A cottage, whether oft we since repair:  
'Tis perch'd upon the green hill-top, but close  
Environ'd with a ring of branching elms,  
That overhang the thatch, itself unseen  
Peeps at the vale below; so thick beest  
With foliage of such dark redundant growth,  
I call'd the low-roof'd lodge 'The Peasant's Nest.'"

The poet adds that he coveted this little spot for its retirement, in spite of the fact that its peasant owner had to fetch his supply of water with difficulty from a ditch in the meadow below, and to wait for the call of the unapunctual baker. We fancy that the "Nest" would soon have lost its chief attraction for one who, in spite of his love of country scenes, could write "Society for me!"

We skirt this little "nida," for such, indeed, it is,—and find ourselves in another shrubbery, with a wider and more formal path, in which the yew, the ash, the beech, and the elm predominate, and in which there still stands a desolate summer-house. Here, again, the ground is consecrated to the Muses, and every step that we take is minutely described in the "Task":—

"Not distant far, a length of colonnade  
Invites us; monument of ancient taste  
Now sacred, but worthy of a better fate.  
Our fathers knew the value of a screen  
From sultry suns, and in their shaded walks  
And long protracted hours enjoy'd at noon  
The gloom and coolness of declining day."

Here the green pathway trends to the left; we are on high ground, and can see that we are gradually making the circuit of what once was the park of the Throgmortons. We pass through lines of chestnuts and beeches, which are disposed with almost such regularity as to form a succession of avenues. It appears that at one time these were sentenced to be cut down:—

"Thanks to Benevolence, he spares me yet  
Those chestnuts ranged in corresponding lines;  
And, though himself so pleas'd, still grieves  
The obsolete proximity of such."

A little further, and we find ourselves on the brink of a somewhat steep declivity, at the foot of which generally runs a little brooklet, though it is dry in summer, crossed by a rustic bridge. This is described by Cowper to the very letter:—

"Descending now (but cautious, lest too fast)  
A sudden steep upon a rustic bridge,  
We pass a gulph, in which the willows dip  
Their pendant boughs, stooping as if to drink.  
Hence, ankle-deep in grass and flow'ry thyme,

We mount again, and feel at every step  
Our foot half sunk to hickocks green and soft,  
Raised by the mole, the miner of the soil."

The above lines were written about the year 1780. It is, perhaps, worthy of note that, on this very spot, a century later, we found the mole still at work raising hillocks, and we carried back in our pocket a dead specimen of that soft-coated little creature, intending to have its skin made into a purse, to be cherished in memory of Cowper. At all events, our "find" will serve to show how little the leading features of the country change.

The ground now rises; we pass on between another row of venerable elms; and a hundred yards or so before us, a little to the left, we descry a rustic summer-house. In the "Task," which is our companion, it is thus described:—

"The summit gain'd, behold the proud alcove  
That crown'd it! 'Tis not all its pride secures  
The grand retreat from injuri-impres'd  
By rural carvers, who with knives deface  
The panels, leaving an obscure rude name.  
So strong the zeal, and senseless hunter  
Beats in the breast of man."

He might have added, "of woman too"; for side by side with the names of John Smith and William Hodge are carved those of Mary Jones and Sarah Brown, and the names written by the "unlettered Muse" in pencil are far more numerous than those "carved" with the penknife. Some of the autographs here are old enough to have been read by Cowper's eye. The view from this alcove is charming, and charmingly pictured to the very letter:—

"Now roves the eye,  
And, post'd on this speculative height,  
Exults in its command. The shepherd here  
Pours out its fleecy tenants o'er the globe."

On our right is a rural lane, with broken gates and dilapidated stone walls:—

"There, from the suburban hayfield, homeward creeps  
The loaded wain; while, lighten'd of its charge,  
The wain that meets it passes wildly by,  
The burth driver leaning on his team."

The prospect is thus minutely described:—

"Not less attractive is the woodland scene:  
Diversified with trees of every growth,  
Alike, yet various. Here, the gray smooth trunks  
Of ash, or lime, or beech, distinctly shine,  
Within the twilight of their distant shades;  
There, lost behind a rising ground, the wood  
Seems sunk, and shorted of its topmost boughs.  
No tree in all the grove but has its charms,  
Though each its hue peculiar; pear some,  
And of a warmish gray; the wilder ash  
And poplar, that with silver lines his leaf;  
And ash, far stretching his embraced arms;  
Of deeper green the elm; and deeper still,  
Lord of the woods, the long-surviving oak.  
Some glossy-leaved, and shining in the sun,  
The maple, and the beech, of only nuts  
Prolifer; and the lime, at dewy eve  
Diffusing odours; nor unnoted pass  
The sycamore, capricious in attire,  
Now green, now tawny, and ere autumn yet  
Have changed the woods, in scarlet honours bright."

We now come to a sharp turn, and a still sharper descent, at the foot of which we cross a ditch, now dry, but which shows signs of running high in winter. The poet again is our interpreter:—

"Hence the declivity is sharp and short,  
And such the re-ascend; between them weeps  
A little Naiad her impetuous urn  
All summer long, which winter fills again."

The statue to which Cowper alludes is gone, but the base of its pedestal remains. Before us the turf is broken, apparently covering the debris of a fallen wall. Here Cowper again is elaborately true:—

"The folded gates would bar my progress now  
But that the lord of the enclosed domain,  
Communicative of the good he owns,  
Admits me to a share."

We enter another avenue; some of its trees still stand, but many are gone; some evidently had perished even in Cowper's time:—

"Refreshing change! Where now the blazing sun?  
By short transition we have lost his glare,  
And it's up'd as once into a cooler clime.  
Ye fallen avenues! O'er, and ere I mourn  
Your fate unmerited; once more rejoice  
That yet a remnant of your race survives."

Remarking to our fellow pilgrim that we had never seen an avenue of trees more beautifully arched and interlaced, adding that it reminded us of the nave or side aisle of a cathedral, our friend read on thus:—

"How airy and how light the graceful arch,  
Yet awful as the consecrated roof  
Re-echoing pious anthems. . . .

"To opposite the light  
Shot through the boughs; it dances as they dance,  
Shadow and sunbeams intermingling quirk,  
And dark'ning and enlight'ning, as the leaves  
Play wanton every moment, every spot."

At the end of this avenue we are confronted by gates and a ha-ha, and find ourselves in an old-fashioned "pleasance," surrounded by

evergreens, which spring out of velvet turf. On our right is a statue of Homer, with an inscription, which, as our volume tells us, is from Cowper's own pen; and also another summer-house, or "colonnade." Here we get a view, through the shrubs, of the barn-doo near the stables of the Manor House. Here Cowper, again, was at hand as an interpreter:—

"And now, with nerves new braced and spirits cheer'd,  
We tread the Wilderness, whose well-roll'd walks,  
With curvature of low and easy steep,  
Deception innocent, give ample space  
To narrow bounds. The Grove receives us next;  
Between the upright shafts of whose tall elms  
We may discern the threaten at his task.  
Trump after tramp resounds the constant fall,  
That seems to swing uncertain, and yet falls  
Full on the destined car. Wide flies the chaff;  
The rustling straw sends up a frequent mist  
Of atoms, sparkling in the noonday beam."

In this Wilderness, as he tells us in one of his Letters, he and Mrs. Unwin were strolling with the Throgmortons, when suddenly they were surprised by a pack of hounds, which killed the fox almost at their feet. But the poet's letters are full of allusions to every spot that we have mentioned.

We have now made the circuit of the estate, some 1,000 acres, and find ourselves once more close to the road which we had left on entering the spiny. The roadway is guarded on either side by the stone piers of large gates, which, if we may believe tradition, were not often closed, except to assert a right of so doing. On the opposite side of the road stand the stables and outbuildings of the Manor House, which was pulled down some fifty years ago. It was a low building, stuccoed over, and crowned with a high-pitched roof, in which was a large upper room that had served for three centuries as a Catholic Chapel for the tenantry of the Throgmortons, who always clung to the old faith. When the house was pulled down, a new chapel was built at the end of the old stables, and the missionary priest who "serves" it occupies two of the coachman's or housekeeper's rooms. In his garden is kept Cowper's own sundial, which he brought with him into this quiet retreat just fifty-five years ago. The sunny terrace on which it stands is shaded on one side by junipers and other pleasant trees, and commands a fine view over the meadows, almost reminding us of an Italian scene.

We leave, however, this pleasant scene, and saunter up the village street towards the church. Having refreshed our outer man with a draught of ale at the "Cowper's Oak," we reach on our right "The Lodge," which was occupied by the poet for five or six years before quitting the Midlands for East Dereham, where he died. It is a pleasant and cheerful residence, and might well pass for the vicarage. The rooms are still kept almost in the same state in which they were when tenanted by the poet, and by his kind friend, Mrs. Unwin, and graced by the occasional presence of Lady Hesketh and his other cousin, her sister. Here he wrote a great part of "The Task" and of his "Table Talk," and many of his pleasantest short poems. Here, too, he translated a great part of his beloved Homer, whose statue we lately visited in the "Grove." His sitting-room downstairs and his bedroom on the first floor are still shown. On a shutter in the latter is a couplet written in pencil in the poet's autograph, expressing his regret at leaving Weston, in July, 1795, and his belief that he should never return to it,—

"Farewell, dear scenes, for ever closed to me!  
Oh! for what sorrows must I now exchange you!"

Nearly opposite is a house once occupied by the Rev. Thomas Scott, the Commentator, when in charge of the village of Weston. Here Cowper must have been often a visitor in order to discuss the deep question of God's foreknowledge. "Oh! that those walls had language!"

About a hundred yards further on, at the extremity of the village, is the little church of Weston Underwood, in which Cowper sat Sunday by Sunday as a willing listener to Scott's Calvinistic sermons. The pews are still standing just as they were a century ago; for, happily the fabric of the church has not been "restored." At the end of the south aisle is a large marble monument erected to the memories of sundry members of the Throgmorton family, and on the south wall of the church hang the helmet and crest and "tabard" of a soldier of the Plantagenet or Tudor times, on which Cowper must often have gazed:—

"The good knight's dust,  
His soul is with the statue, we trust."

But the day is drawing to a close, and we must

retrace our steps to Olney. As we do so, we read aloud the following extract from an autograph letter of Cowper, which refers to some spot on the very road that we tread. It is addressed to his friend, Samuel Rose, and is dated from "The Lodge," Weston, Saturday, Feb. 5, 1791. "Your very handsome present of Pope's Homer has arrived safe, notwithstanding an accident that befel him by the way. The Hall servant brought the parcel from Olney, resting it on the pommel of the saddle, and his horse fell with him. Pope in consequence was rolled in the dirt, but being well coated got no damage. . . . I have found a place for him in the parlour, where he makes a splendid appearance."

The estate of Weston is placed in the hands of Messrs. E. Smith & Co. for sale by private contract; in default of which it will be put up to auction before the end of the summer.

#### DECORATION AS APPLIED TO ARCHITECTURE, FROM A PAINTER'S POINT OF VIEW.\*

I HAVE been asked to write a paper on a subject about which so much has been written, and well written, that it is almost impossible to say anything new about it; but perhaps, when looking at the subject from my own (a painter's) point of view, I may be able to say something which may be of interest to you as architects. It is unfortunately out of my power to speak of any of the earlier work, such as is to be found at Assisi, Perugia, and other towns north of Rome, but in Rome itself and the surrounding neighbourhood we can examine the later work at its perfection and the commencement of its decline better, I should think, than anywhere else. In the Vatican, too, we have the advantage of being able to study entire rooms left almost, if not quite, as they originally were; and, as I am unable to give drawings in illustration of what I say, it will be an advantage that most of what I speak of is, to a certain extent, familiar to all of us.

I will divide what I have to say under the heads of Arrangement, Scale, Colour, Construction, Relief, and Material.

##### Arrangement.

To commence, then, with the Vatican. In the roof of the Sistine Chapel the main subjects of the flat of ceiling are placed lengthwise across the ceiling, so that to look at each and all of them it is necessary to face the altar; but these subjects are surrounded by the single figures of the Prophets and Sibyls, and groups in the cove, so placed that whichever way you may be looking at the ceiling you must see one or more of them the right way up. Even with this marvellous work before me I cannot help wishing that it was on the walls instead of the ceiling. It seems to me that anything requiring very much study from spectators is out of place on a ceiling, and that important figure subjects, if introduced at all, should be so arranged that they can be easily seen and taken in at one view, while the main subjects should be on the perpendicular surfaces of the walls, where they can be seen and studied without difficulty. In this case more particularly do we wish to study carefully every square foot of the painted surface, for this wonderful work is, or should be, one may say, a standard of excellence in design and style for painters of all time.

The ceilings in the *stanzas* of Raffaello's very much in excellence; and the later ones, in the designs of which he can, I fancy, have taken but a small share, if any, show very plainly that the decadence had commenced. In the *Camera della Segnatura* the ceiling is beautifully arranged, so that the centre compartment can be seen whatever the position of the spectator underneath, and also one or another of the four compartments containing the large well-known figures representing Theology, Philosophy, Poetry, and Jurisprudence.

This ceiling is much better divided and arranged than that of the next room (the *Heliodorus*), which is not so well balanced. Having taken a circle, divided into four, as the main division of the ceiling,—the room not being quite square,—the extra spaces at the shorter sides of the room have to be in some way filled up, and in this case these spaces have been made unnecessarily wide. It seems as if this had

been done in order to get more space for the small figure-subjects in grisaille; whereas, by another arrangement, there would be a much smaller space left, which in the former room is done, and is filled up with a running ornament. This seems to me much better in effect than the cutting up into so many small spaces for the grisailles.

A large good instance of the inconvenience of a large picture on a ceiling is to be seen in the last room, the Sala Constantino, where the centre compartment of the ceiling is occupied by a large picture which can only be seen from one place. This is also the case with the much over-praised "Aurora" of Guido, in the Rospigliosi Palace, and countless other ceilings in Rome of the late period. The top of the ceiling of the Sala Constantino is more depressed in section than that of the Sistine Chapel, which is, I believe, a flat semi-ellipse. A large picture in the centre of such a ceiling, with no reason for the spectator being in one place more than in another, is surely wrong, whilst in the case of the ellipse, though almost equivalent to a flat surface at the top, it would be rather more allowable; and Michelangelo has made the most of the perpendicular portion, by carrying up the figures at the sides right into the curved part, and not improbably for this reason. Here, also, the spectator is always supposed to be facing the altar, and is not intended to see the ceiling unless so doing. It seems to me, then, that the pictorial treatment of a flat ceiling is not advisable.

It appears to me that in this respect the French painters of the present day are entirely wrong. They go in very much for the pictorial decoration of ceilings in a florid manner, continuing the Italian traditions of the late period, apparently basing their work upon that of the Cavaliere d'Arpino, about the middle of the seventeenth century, and others of that time.

One of the subjects of design always given to a French student of painting at the Villa Medici, which he has to send home in the year, is the decoration of a ceiling. It has never obtained much here, and instances are comparatively rare of ceilings treated in this manner.

The secret of the fitness of a certain treatment for a certain place in a building seems to lie very much in this,—that the higher the constructive value is of the space to be decorated, the more severe and conventional should that decoration be,—if decorated at all. The decoration is intended for those parts not so structurally important. Where the ceiling is quite plain and unpanelled, the decoration should be very evenly distributed; where the ceiling is panelled, or otherwise divided, those spaces, such as the panels, can be decorated more pictorially than the more constructive parts, such as the mouldings or the borders inclosing the panels. There are numerous examples of this in the work of the best time. Pinturicchio's ceiling in the choir of Santa Maria del Popolo (which has been published by the Arundel Society) illustrates this very plainly, as do the *stanzas* of Raffaello. A similar principle is well illustrated by the "grotesche," or modelled reliefs in *gesso*. At the Villa Madama there are some lovely examples of this mode of decoration. It seems to me that it might be made much more use of in England than it is at present. I do not think it need necessarily be expensive; a great deal of the best at the Villa Madama seems to have been executed by pressing a mould on to the wet plaster, and slightly modelling on it, if necessary, afterwards. There can be no reason why it should not be used with a more severe style of architecture, if treated with more reticence than it is here. And I fail to see why, when good designs have been made by good artists, that they should not be repeated again and again. Formerly, if a design were really good, people saw no reason why it should not be used again under different circumstances. Now, it is usually the bad examples which are reproduced *ad nauseam*. Nowadays I dare say there would be an outcry if a well-known artist were to design stuccoes for a house, say in Park-lane, and make use of some of them again in decorating a house in Prince's Gate. These stuccoes were made much use of by Giovanni da Udine and others of that time. When on a wall panel there is no reason why they should not have considerable relief, or on a spandrel or place not so constructively important, say, in an architrave or panels of a pilaster.

The same principle seems to run through the whole,—that the more essentially constructive part of a building is, either in reality or even in

appearance, the more severely and conventionally it should be treated as regards its decoration. This can be seen very well in Raffaello's Loggia in the Vatican, though in some respects he has gone contrary to the law by decorating the side pilasters with flowing and undulating arabesques, which take all firmness and stability away from them, and at once cause them to lose their constructive value,—in this case a real one. In earlier work a plaster is never treated in this way, either in painting or sculpture; it usually has a line running perpendicularly down it through the ornament, which gives the requisite suggestion of strength, and the ornament is always more severe and has less relief than in other places. There are good examples of this in Santa Maria del Popolo, surrounding the windows in a chapel painted by Pinturicchio. The ornament is low in relief (in marble), and flowing round the curved top of the window and at the bottom, whilst at the sides it is perpendicular in its motif, and has a stem, as it were, running down all through it, which gives it stability. I noticed in one of the flat pavement tombs, of which there are some good examples here, that a border was treated in this way, having a very unpleasant effect on the horizontal surface, and particularly when I happened to see the tomb upside down. Surely when this is to be seen from any point, and is itself horizontal, it should be treated with running ornament, or ornament like what might be found on a moulding, and not with that which is expressive of a perpendicular motif. On the other hand, there can be no objection to such a treatment in the frontispiece of a book, as we see in so many of Holbein and his school, for in this case it is to be seen only from one point of view, and there can be no objection to an upright treatment.

##### Scale.

The effect of all the *stanzas* is much marred by hideous yellow figures and caryatides on the dado, which throw the pictures out of scale by their enormous size. On the other hand, I do not object (that is to say, as regards scale) to the medallions on the dado or the smaller figures on the ceiling; they do not seem to interfere with the rest. I believe that many architects would say that such combination is absolutely wrong, and that all the figures, both on the ceiling and the walls, should be to exactly the same scale. This I entirely disagree with, as it limits so very much the use of figure subjects, and I do not see the necessity for it. What seems to me necessary is that all figures of the same rank,—occupying that is, equally important places on the walls or ceiling,—should be to one scale, while those of another rank may be to another scale; according to their importance in the scheme, so should be the scale of the figures, and those very far from the eye should not be to too small a scale, so that everything may be seen clearly.

The scale of the figures in the "School of Athens" and the "Disputa" appears to be a little less than life. As regards scale, I think that, as a rule, even in good Renaissance work, they are far too apt to put elaborate small work in places where it is quite lost, and is often injurious to the general effect. This seems to be particularly the case with the stucco-work before mentioned. At the Villa Madama there is much beautiful work placed very high up on the domed ceilings, especially some very exquisitely proportioned and modelled female figures, and some extremely beautiful arabesque borders, which have no business there; they should be where they can be seen. This is also the case very much at the old palace called "Papa Giulio," about half a mile out of Rome, beyond the Porta del Popolo, which has some extremely fine stucco-work,—very fine in design, especially a frieze in one of the principal rooms, in which *amoris* are combined with foliage, forming a most lovely decoration. This question of scale is rather a vexed one, and artists differ very much about it.

If we are to carry out the principle I first mentioned of making all the figures to one scale, we might have to go even farther, and make every object introduced in the decoration round to fit scale with the figures, which surely would tie the artist down most unnecessarily.

In the case, for example, of an altar-piece in several compartments,—very often three,—the three would be to the same scale, while there would very likely be smaller pictures to a different scale below in the predella, illustrating different episodes probably in the life of the

\* By Mr. R. Corbett. Read at the meeting of the Architectural Association on the 10th inst., as elsewhere mentioned.

saint. Were the artist restricted to one scale he would be debased from this; and, if he had smaller compartments at all, would be obliged to fill them with ornament only. It was suggested to me, as a likely reason for putting small work so high (as I mentioned was the case at the Villa Madama and elsewhere), a desire to increase the apparent size of the vault, and it looks as if it might be so. On the whole, I think the Villa Madama superior to Raffaele's Loggia; it is not quite so overloaded with ornament, and the stuccoes are extremely beautiful both in design and execution.

#### Colour.

Even distribution, and the most perfect balance of colour, is what Raffaele has carried to perfection in the "Disputa." The gilt parts are few, only up at the top of the picture, where they combine with the richness of the gold ground on which the greater part of the ceiling is painted. Even the Host on the altar, and the rays from the Dove above it, are painted, not gilt; also the ornament on the altar-cloth. Were these gilt, they would glitter and destroy the breadth of effect; also, the parts which Raffaele has gilded are at the top of the picture, where they get no direct light, and, in consequence, do not glitter, but only look rich, and gradually lead up to the still greater richness of the ceiling. In the ceiling, the gilt ground of the pictures (not of the framework in which they are set) is lined over with a rich brown, giving the effect of mosaic; it prevents the larger masses of gold from predominating, and has a very pleasing effect. In the smaller subjects the mosaic divisions are reduced in scale to suit the size of the figures. Even in ornament I doubt the expediency of using gold in places very well lighted, as in its application it is often difficult to determine when and where to stop. If a fresco is surrounded by much rich work, it seems necessary that it should have, perhaps, in itself much gilding; but it is very likely to lose rather than to gain by such surroundings, and in order to stand against rich marbles, gold, mosaic, and the like, if it would not be thrown quite into the shade, it must avail itself of such a resource as gilding. I often feel that, even in the good old work, the gilt parts of a fresco tell as spots, and injure the breadth of effect, even when very evenly distributed. This can be seen in the frescoes in the Sistine Chapel below those of Michelangelo, by Luca Signorelli, Botticelli, and others, though in this instance the gold is used only in thin lines and patterns on the dresses. I fancy nothing harmonises really well with mosaic except a wealth of rich marble of varied colour; and as in England can seldom get these in any quantity, I fear it is an argument against the very general use of mosaic,—at any rate, that with much gold in it,—though, on the other hand, it has great advantages for our climate, as, besides being so permanent, it looks well in a low light.

As regards the general effect of a painted wall decoration, it should, I think, not be too dark, because it has no gold frame like an easel picture to isolate it; and, for a similar reason, white should never be too high in key. The latter would also give an unsubstantial look, as it suggests a hole in the wall with light seen beyond. For these reasons I think a middle tone is the most suitable, but it would be better to be too light than too dark of the two. In the Convent of St. Mark, at Florence, Fra Angelico has represented many monks in black dresses, but he never paints them black, or anything really approaching it, not because he had not the means or was unable to do it, but evidently because he felt it was unsuitable.

White is often used by Pinturicchio in his ceilings with particularly happy results. It is always very low in tone, but even then it is the most prominent of the colours in effect, and is always used when he wishes to emphasise a moulding or line round a medallion, to isolate it from the ground on which it is placed. I must repeat again what I said about the use of gold; if used in shadow it always looks well and rich, and helps other colours, especially blue and red, very much. Pinturicchio uses it with great success in bands of ornament in deep shadow on the ceiling mentioned before, but he never seems to use it in any quantity when in light.

#### Construction.

All through the stanzas one meets with a great deal of what I cannot but think misplaced decoration. In the so-called "Disputa" the

plasters at the sides drawn in perspective are a great mistake, and I cannot see the occasion for them; the perspective of the pavement gives quite enough perspective to the picture. The ornament round the top of the picture is also in perspective. I am sure that the whole would gain if this were more conventionally treated, and the painted mouldings dividing the panels of the ceiling might perhaps be treated rather more flatly, as in many cases they have the appearance of real mouldings. This applies to a certain extent to the ceiling by Pinturicchio, in the choir of S. Maria del Popolo, where the painted mouldings are in some cases very deceptive. There are strong cast shadows from the pilasters (painted) of the niches containing the figures of the four Fathers of the Church in the pendentives, which have a very unpleasant effect, as it strikes the observer that such niches could not possibly exist in such a position, and it makes them look as if they would fall forward at any minute. This realistic treatment is surely an error. Had the cast shadows not been insisted on, there would have been no objection to the painted architecture, as it would then have become merely a symbol, and a means of dividing up the space. This ceiling has been very much restored not long since, and I think that much of what we now see is due to other hands than those of Pinturicchio. This painted architecture is to be found in all the stanzas and on the roof of the Sistine Chapel, and we have all heard much said against it in these days by architects; but surely there can be no reason against dividing a ceiling beautifully by means of an imaginary architectural construction and decorating the spaces so made, so long as (and this is the important point) the architecture is treated as painted architecture, and not carried so far that by means of strong cast shadows and very forced perspective it is made to look as if it formed part of the actual construction of the building decorated. There are few things more annoying than looking up at a ceiling and fancying that you see the groining of a roof, and discovering, on closer examination, that it is only painted. On the other hand, I fail to see why a ceiling should not be divided as if by groining or rectly designed, supposing the construction to be actually vaulted. If it be treated quite flatly, and merely as a means of separating one portion of the vault from another, all these representations of architecture should be definite representations; there should not be for a moment a doubt in the mind of the spectator that what he sees is not a real moulding, but a painted one; and were these mouldings treated carefully, they need deceive no one. I feel pretty sure that in the case of Pinturicchio's work in S. Maria del Popolo, what we now see of strong cast shadows and other resources for realistic effect is due to other and later hands. Almost all his work in this church has been much injured by so-called restoration, and the great thing seems now to be to make a thing look like what it is not. Formerly in Italy, and doubtless elsewhere, a brick house was covered with stucco, and marked so as to look like stone; now they cover them with stucco, and then paint and mark them to make them look like brick again.

In the case of the Sistine Chapel, the figures are so solid and so wonderfully real that Michelangelo may have felt it was necessary to make much of his painted architecture in order to support his figures, and consequently has made it stronger in relief than would, perhaps, have been justifiable in the case of figures less wonderfully solid and in every sense large. Each niche in which a prophet is seated has its own vanishing point, so that there can be never any question as to the reality or non-reality of the representation. But, on the whole, I am inclined to say that it would be better not to represent, in a purely decorative way on a surface, things which might themselves in reality be there.

False construction and bad taste are carried to an extreme excess in the Sala Constantine, which is later in date than the other rooms. We find the huge picture of the battle of Constantine painted on the main wall, with edges painted so as to look as if the picture were painted on a curtain, with a fringe at the bottom, and the top edge shown as if suspended from rings, though the artist has not gone so far as to carry the folds which must necessarily ensue down into the picture, which, if consistent, he would have done. What is so objectionable in this last room, with regard to the painted architecture, is that what is painted in order to re-

present say a pillar or pilaster, either to divide a space or to emphasise construction, often forms part of the actual picture as well. So what he has really done is to jumble the whole thing up together: architecture painted so as to represent real architecture, architecture painted so as to form part of a picture, and architecture professing to serve both these ends forming part of a picture, and forming part also of the construction of the room; and each and all represented in an equally realistic manner. But this is a supremely bad example of the style, and I think it should be borne in mind that in this style of the Renaissance, both early, middle, and late, the architecture is often responsible in a measure for the decoration, and much that is admissible in late Renaissance decoration would not be admissible in a purer style.

The indifference to construction seems to be almost a principle of a great deal of Renaissance architecture, and in direct contrast to the Gothic principle (which is more in favour now) of showing on the outside, as far as possible, the construction and arrangement that is within. No wonder, then, that the decoration assumed a similar licence, and false construction became a canon of art decorative as well as architectural.

What is so beautiful in Renaissance decoration is the design of the detail and the execution and finish of the work, often wrongly distributed, often put high up in places where it cannot be seen, often divided up and injured by the excessive amount of it, but usually lovely in motif, and generally (at any rate in most of the examples I have seen here), exquisite in execution.

#### Relief.

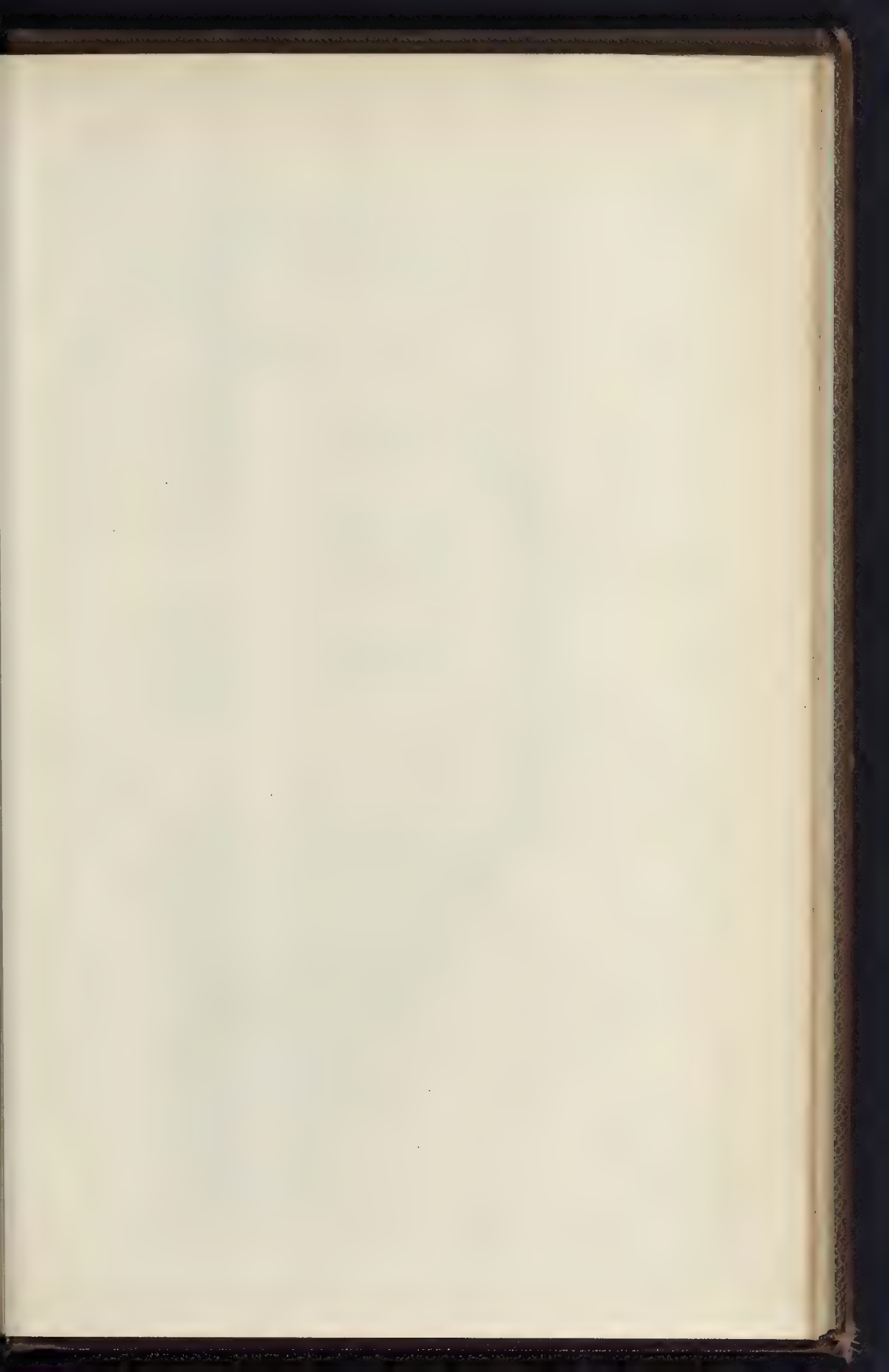
It is the fashion with some architects of the present day, when they have figure decoration to design or superintend, to insist on having it in flat tints with dark outlines. In some cases, no doubt, it is want of funds which makes this a necessity if the decoration is to be of figures, but to assume it as a principle of good decoration is surely a mistake.

The early painters of the twelfth and thirteenth centuries did not make all their figures flat because they thought it right, but because they were unable to make them round and solid; and it is easy to trace the effort to attain solidity and roundness through all the best art of Italy right up to the sixteenth century. The beauty of these early pictures consists in no way in their flatness, though I have often heard work of this kind praised by architects for its decorative fitness because it was flat. The flat tint and dark outline is only a concession to want of funds, or inability to produce work demanding so much more time and skill. Of course the amount of relief required depends on what the decoration is, what place in the whole scheme of decoration it occupies: if on a place of very evident constructive value it should not (as before mentioned) be in very strong relief; but in a case of this kind the sort of decoration employed would and should preclude this being possible.

The more important parts constructionally of a building (following the principle discussed when speaking of construction) certainly demand less relief than those spaces less necessary to the construction. For instance, a pilaster will bear less relief (not only relief represented by means of colours on the flat surface, but relief modelled, as in stucco or marble) than will a spandrel. As rounded forms are shown off more in a side light than a front or a diffused light, the relief of the stucco must be treated accordingly. A very good effect seems to be obtained in many instances by incising a line, especially if it be upright in its general direction; this will always tell in a diffused light. The Elgin frieze is a very good example of a similar treatment. It was intended to be seen in a diffused light, and the whole treatment is very flat, the outline being every now and then insisted on. Of course, when much relief is used in a decorative treatment of stucco, it must be supported by much greater strength and width of mouldings.

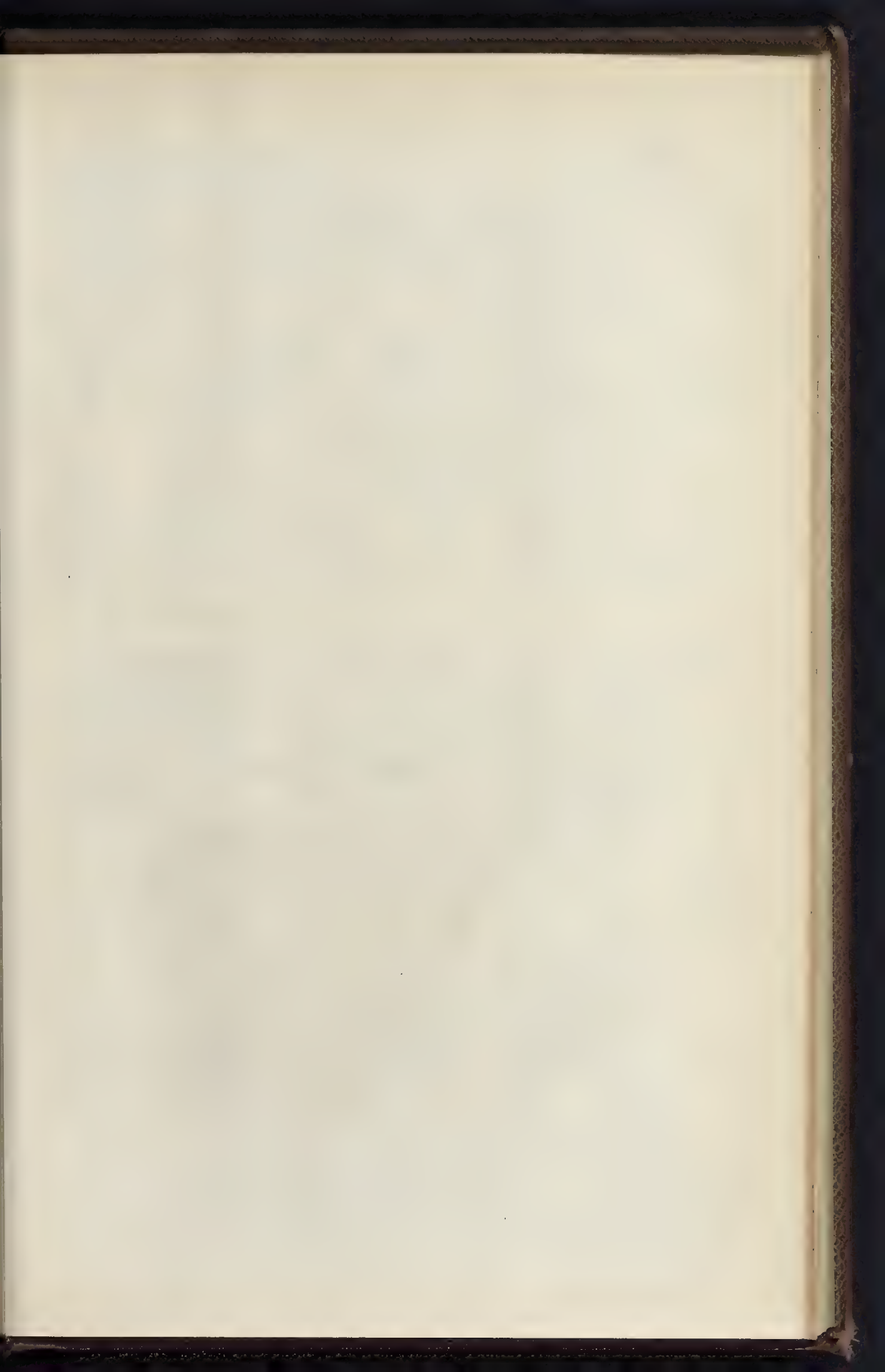
#### Material.

A final word on the subject of the materials for decorative purposes. Of course, from my point of view, fresco is, *par excellence*, the material, and it is a great pity that it is not more used in England. I do not mean that it should be used only for the production of important pictures, which seems to be the only use to



THE BUILDER, JUNE 18, 1881



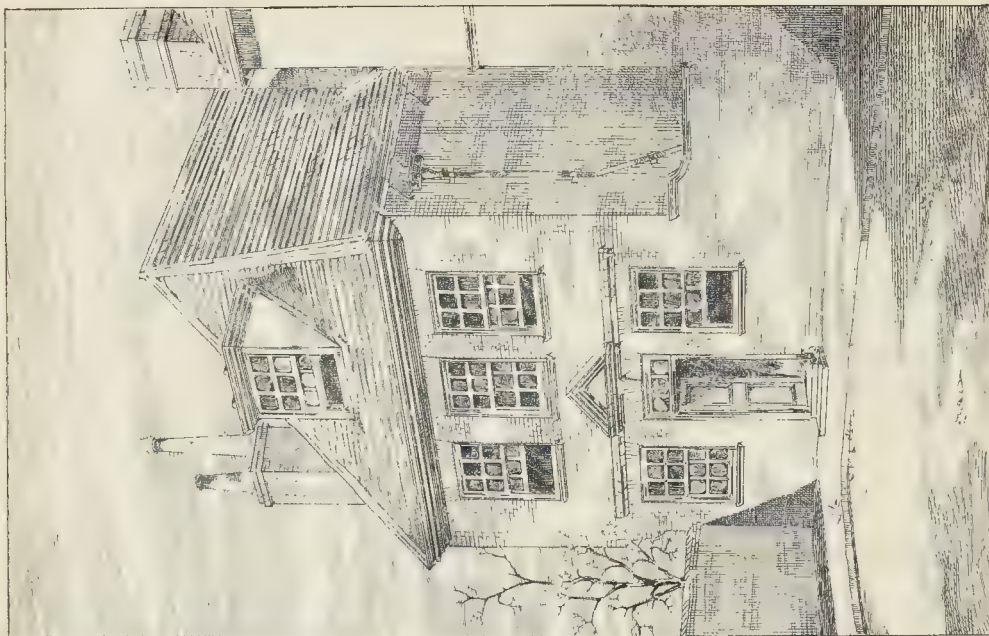


THE BUILDER, JUNE 13, 1881.

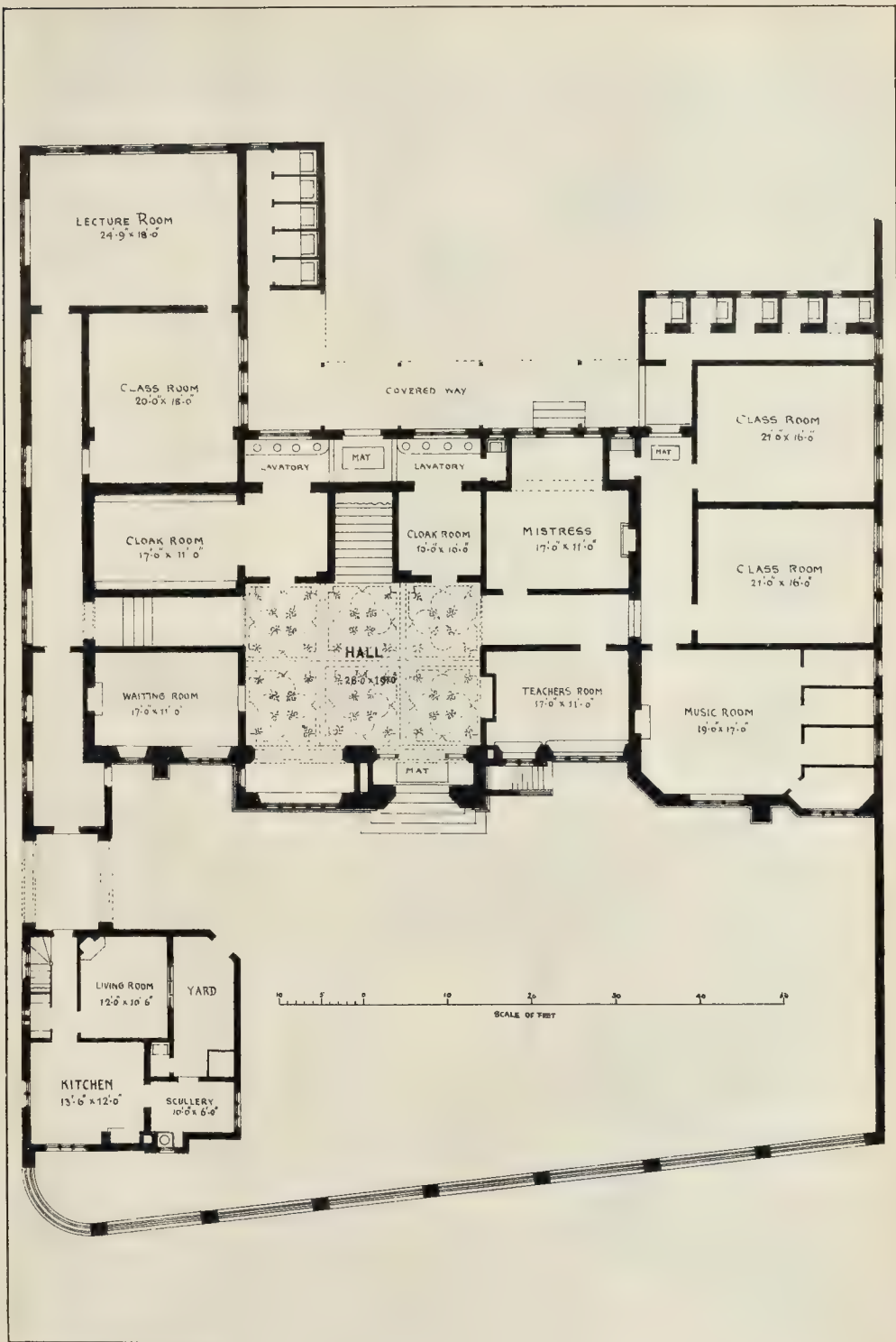


THE OLD GRAMMAR SCHOOL

- BITS FROM ALTON HANTS -



SMALL HOUSE IN MARKET-SQUARE



W. H. & S. B. W. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Wyman & Sons Printers Queen St.

WYGGSTONE HOSPITAL, LEICESTER: NEW GIRLS' SCHOOL.— Ground Floor Plan.



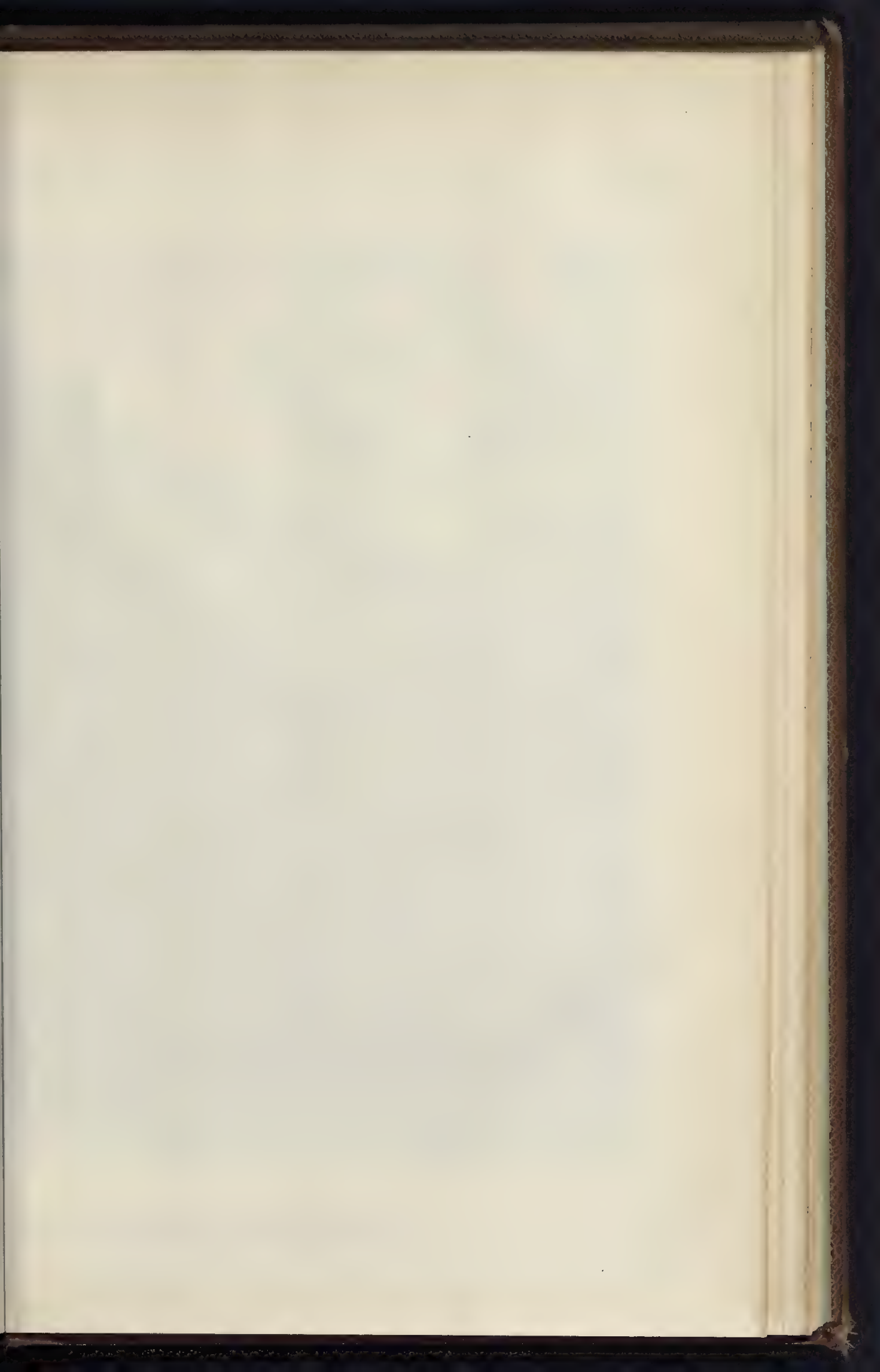


Wyggestone Hospital

WYGGESTONE HOSPITAL, LEICESTER: NEW GIRLS' SCHOOL.—MR. EDWARD BURGESS, ARCHITECT.

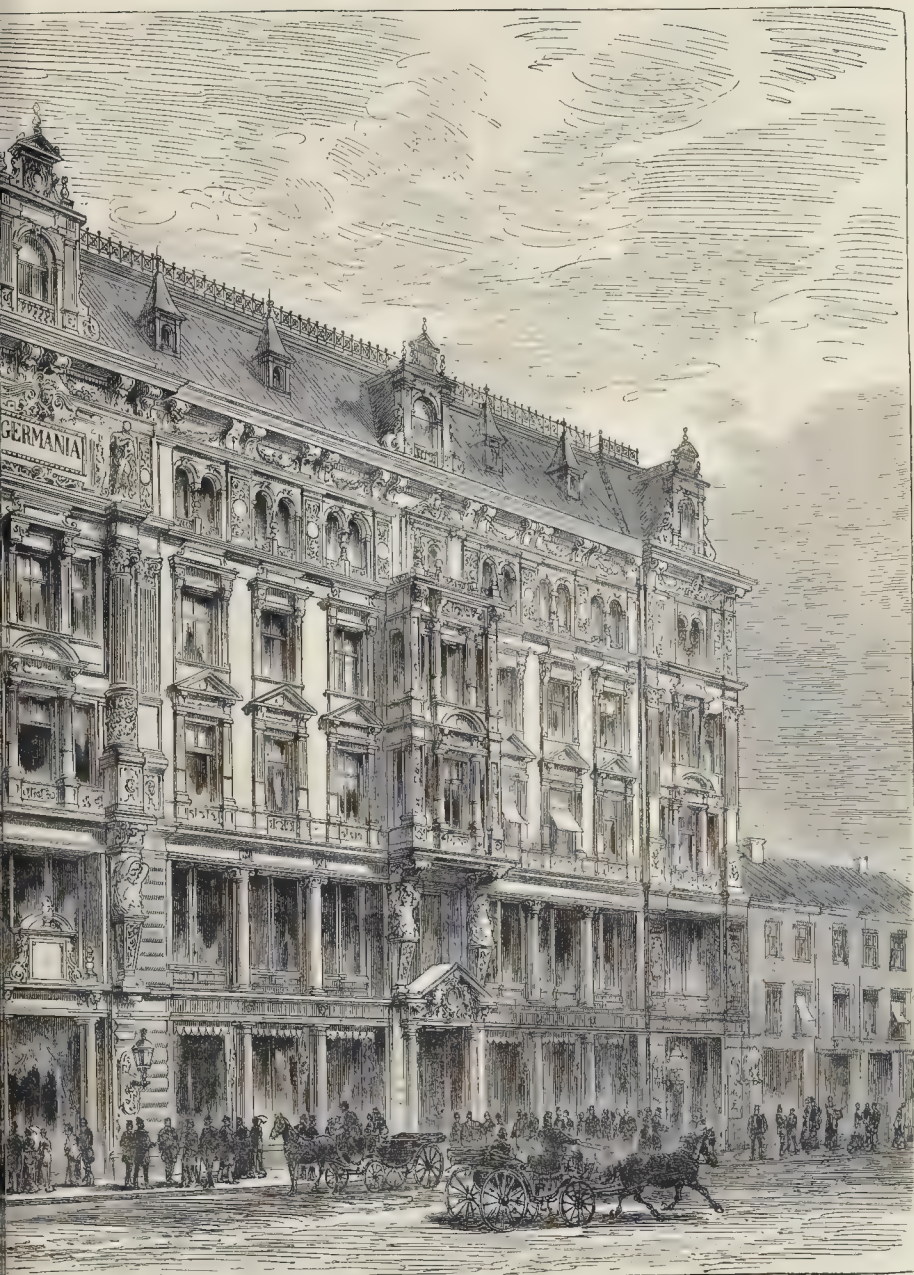
Wyggestone Hospital







OFFICES OF THE LIFE ASSURANCE SOCIETY, "GERMANIA," FRIED



STRASSE, BERLIN.—HERREN KATZER AND VON GROSSHEIM, ARCHITECTS.



which it has yet been put in England; for ceilings or walls decorated with arabesque or what not, and places where large pictures may not be required, it possesses to the full all the qualities most desirable for this as well as for large monumental works, and spirit fresco, so-called (the Gambier Parry process), comes very near it. For some reasons not hitherto satisfactorily explained, pure fresco does not seem to stand well in this country, I fancy very often because we do not sufficiently know how to use it.

Most of the painting which we find combined with stucco relief is in distemper and most beautifully executed; indeed, the tradition of this work has been handed down even to the present day, and I believe Italian workmen are to be found now who are no longer artists in the right sense, but whose technical skill enables them to execute ornamental work in distemper in a way that very few Englishmen could. It is, to a great extent, the same in Italy with all the artists. The workers in marble and the wood-carvers are to this day almost unequalled for a certain technical skill and power over their material. But I think that, even if the pictures are only to be small medallions surrounded by much ornament, as in the ceiling, before mentioned, in the third chapel in S. Maria del Popolo, fresco is a very good material, and one which might be used with better effect than any other. But, putting aside fresco, there are many other modes of painting walls.

Encaustic is a very fine medium, seldom or never used, I believe, in this country. We all know its wonderful powers of lasting and of withstanding damp. According to Müller, the wall paintings at Pompeii were not encaustic, but merely water-colours on smooth plaster, distemper, in fact, though the effect of some of them is certainly much like encaustic. At Herculaneum, which I have not visited, Müller says the ground is generally fresco and the rest tempera. A great deal of the Egyptian painting was very like encaustic; if not so in the true sense, the colours were mixed, in a great measure, with wax, and laid on the dry plaster. True fresco does not seem to have been known to them, at any rate it was not used by them. Wax might be made much more use of; it renders colours safe from damp and gives a good surface, besides being a very pleasant medium to work with.

#### OFFICES OF THE LIFE ASSURANCE SOCIETY, "GERMANIA," BERLIN.

GREAT as may have been the evils that followed in the wake of the reckless speculation engendered during the time known as the "Gründerperiode" in Germany, Berlin has every reason to look back with gratitude upon those stirring times. The permanent benefits conferred upon the city during that period of inflation are manifold. The unprecedented development of the speculative mania acted in a remarkable manner upon the progress of architecture. Up to that time Berlin architects had aimed principally at simplicity, solidity, and practical usefulness, and even the creative power of a Schinkel was scarcely allowed full sway; but during the speculative period a complete change was effected in this respect. The simple and sober Greekish style which Schinkel had founded was looked upon as too monotonous; during the time of Friedrich Wilhelm IV. already the types of the picturesque middle ages served as models, but it was not until the present reign that the Renaissance was finally established in Berlin. The great commercial progress of Berlin, which doubled the number of its inhabitants in fifteen years, and made the city on the Spree the financial centre of Germany, caused numerous insinuations to take up their quarters there, and to erect palace-like offices. The small, one-storied buildings, with their plain façades of the time of Friedrich Wilhelm I., gradually disappeared, their sites being filled up by sumptuous buildings, in the erection of which sandstones, granite, and even marble were lavishly employed. The jejune and simplicity which were characteristic of the capital until 1860 gave place to a wealth of form and colour which had formerly been considered impossible, and had been condemned as *bizarre*.

This transformation was most quickly effected in the Dorotheenstrasse and Friedrichstrasse, that brilliant and largely-frequented quarter of the city which, as the promenade of the upper classes of society, exerts the greatest power of attraction upon the visitor, and is able to com-

pete with Paris by the wealth of its shops and shows. There, in the principal artery of Berlin, the Grosse Friedrichstrasse, near Unter den Linden and the Gendarmenmarkt, the "Germania" Life Assurance Society has had erected magnificent offices, which eclipse all other similar buildings there. We present our readers with a view of the structure.

Its architects, Herren Kayser and von Grossheim, had previously found scope for the exercise of their talents, but they had never before seen an opportunity of following entirely their own inclinations as in the erection of the "Germania" offices. It is true the architects had to be guided in the utilisation of the space placed at their disposal by considerations of income, the two lower stories being intended for shops and offices, the three upper for private residences; but they were permitted to erect the façades in the richest monumental style, and to employ exclusively native material. The Northern brick was rigidly excluded, its place being taken by the Nesselberg sandstone, of an exceedingly fine grain and a delicate yellowish hue; the pillars and columns are of Swedish granite of grey colour with a light reddish hue, and the intervening spaces and niches of polished black marble. The capitals of the columns and the richly ornamented lamps are executed in bronze. The castles and palaces in the old imperial free cities of the flourishing period of the German Renaissance, and especially the well-known castle at Heidelberg, served as models for the edifice. At the same time, there is no trace of slavish imitation; the requirements of our time have been duly considered, and the teachings of a Schinkel and a Stüler have been taken note of. This shows itself especially in the harmonic formation of the façades, and in the careful execution of the details.

The base of the two façades, which, together, have a length of 295 ft., consists of polished grey granite, which, as well as that for all the parts of the building executed in this material, has been derived from the Swedish quarries of the eminent firm of Kassel & Köhl. Upon this base rise two stories, used solely for shops and offices, as already noticed, and provided with large plate-glass windows. In order to obviate the usual monotony, a suitable division of the façades has been adopted, which runs through all the stories. The corner projection is most pronounced; but, besides, two piers in each façade project. The quoins, as principal supports, are boldly rusticated, while the pillars of the façades are richly ornamented. The large windows are separated by handsome columns of polished granite, which in the ground story are of the Tuscan, in the first story of the Ionic, order. A bold entablature separates this portion of the façades from the second and third stories, which display larger surfaces of ashlar stonework, and the windows of which are framed by pilasters and surmounted by well-developed pediments. The fourth story is also divided from those below by a bold cornice. But the greatest care, in point of decoration, has been bestowed upon the two central portals and that of the corner. In each case two Doric columns support an entablature and pediment. Above these are projecting bays resting on large Caryatides. Handsome dormers and statues present themselves above the oriel, and the architect and sculptor have co-operated to produce a handsome façade.

#### SKETCHES IN ALTON, HANTS.

THE accompanying drawings of two bits from Alton give a general idea of several residences of this picturesque town, more especially that of the little "Queen Anne" house, in which style there are many examples. The old Grammar School is situated a short distance out of the town, and is set back 30 ft. or so from the road. To the best of my belief, it has been a school since it was founded, amongst so many others in the kingdom during the sixteenth and seventeenth centuries. The mullions and transoms of this building are of moulded bricks, many examples of which are to be found in the neighbouring districts.

EDWIN G. HARDY.

**Sydney Exhibition.**—A first-class medal and diploma have been awarded for merit in architectural design to the late firm of Tarring & Wilkinson, which has recently dissolved, Mr. Tarring still carrying on business in Basinghall-street, and Mr. Wilkinson at Furnival's Inn.

#### THE ALEXANDRA THEATRE, LONDON.

THE new theatre, now being erected by Mr. J. H. Addison, in Panton-street, Haymarket, for Mr. Henderson, from the designs and under the superintendence of Mr. Thomas Verity, F.R.I.B.A., will be, in many respects, unique in its arrangements; more particularly, we may instance the entire absence of corridors, so that, in the event of panic or fire (which is just now engaging so much attention) the whole house can be quickly emptied, either directly into the street or into absolutely fireproof staircases. The theatre, being situated at the junction of two streets, will have the great advantage of numerous exits, every part of the house having two or more separate means of egress, and, in fact, every precaution which the architect could devise, or the Metropolitan Board of Works could suggest, has been adopted in order to render this theatre as perfect as possible for the safety and convenience of the public. The dress-circle will be entered directly from the street level through a spacious vestibule, having on the left hand a handsome saloon. The stalls will be approached by fireproof staircases on either side. The upper-boxes, pit, and gallery are to be equally well provided with staircases. It is intended to illuminate the entire auditorium by the electric light, but to avoid the possibility of the theatre being plunged, by any accident to the machinery, into darkness, a certain number of gas-jets will be also provided. The house will accommodate 160 in the stalls, 130 in the dress-circle, 170 in the upper-boxes, 400 in the pit, and 270 in the gallery, besides having 14 private boxes. The theatre will be opened in the autumn for the performance of comic opera, and the opening piece will, we understand, be "Count Hoffman."

#### WYGGESTON HOSPITAL GIRLS' SCHOOL.

THIS girls' school has been lately built from the designs of Mr. Edward Burgess, of London, architect, to accommodate 250 children.

The materials used are red brick and Ancaster stone, with tiles on the roofs. The *flèche* is covered with lead, and some half-timber work is introduced in the lodge. The builders were Messrs. J. Hutchinson & Sons, of Leicester.

#### THE SCOTCH SYSTEM OF TAKING QUANTITIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.

MR. JOHN McLAUGHLIN, as president of the Association, delivered a valedictory address at the closing meeting of the session. The treasurer's report showed the funds to be in a flourishing condition, and the lecture session just closed was spoken of as having been very successful.

In the course of his address, the President, describing the proceedings at the recent Conference of Architects in London, said with reference to the discussion on "Quantities,"—To those situated like ourselves, practising principally in one neighbourhood, it was amazing to find, as the discussion advanced, the different methods of procedure which prevailed in different parts of the country. In London, it seems, there is no regularly organised body of surveyors. Many, if not most, of the London architects measure their own plans. It is only those architects in the best practice who do not measure their own plans, or at least have the schedules prepared in their offices. When works are large, it is customary that two surveyors be employed, each working for himself. The one is appointed in the interest of the client, the other of the builder's. It is difficult to see any reason for two separate surveyors for a work, unless either on the ground of incompetency or roguery. I regret to say that in the course of the discussion Professor Kerr spoke in anything but flattering terms of surveyors in London. He said that with some honourable exceptions they bore a very shady reputation. The provincial architects in England almost invariably measure their own plans. They do not generally hold themselves responsible for the correctness of the measurements, and yet they charge 2½ per cent. for preparing them, in addition to their 5 per cent. as architects. The principal reasons given by those architects present at the meeting for the course taken by them in preparing their own bills of quantities were that there were no surveyors in their neighbourhoods, and to send

their plans to London to be measured would be a costly and troublesome process. The second reason, and as I suspect the most potent one, is that taking out the quantities is the best paying part of their practice, and, therefore, they would be very unwilling to give it up. The third reason, which, indeed, was made the principal reason by many speakers, was that nobody could take out the quantities so well as the architect, because nobody knew so well about the plans. With our experience in Edinburgh of the correct and detailed schedules of our ordained surveyors, this reason will not weigh heavily. Our own Scotch method I need not describe at length. There is a slight difference between the Edinburgh and Glasgow methods, but it is only slight. Practically, the method of procedure is the same in the two cities. Architects do not measure their own plans. There is a separate class of men, surveyors,—men of high class,—whose generally irreplicable character is at stake in the correctness or otherwise of their schedules. The schedules are prepared at the commencement of the work, and the contract is founded upon them. Should there be any additions or deductions, these are regulated by the priced schedule, which is signed by the contractor as one of the conditions of the acceptance of his offer. The only difference, as far as I could understand, between the Glasgow system and the system prevailing here is that the first schedule on which the contract is founded is, in Glasgow, more a tentative document than it is with us. With us the first schedule is a very complete and exact document, and if no alterations were made in the building it would show exactly what would be the final cost of it. But, in Glasgow, the first schedule is not made so complete as with us, and the result is that the works are all measured up at completion, the first schedule being used more as a price-list from which the prices in the completed schedule are got. You will thus see that the difference between our usage and that of our brethren in the West is one more of detail than principle. We may, to all intents and purposes, therefore, talk of our Scotch system of contracting as one, and we have no reason whatever to be ashamed of it. It bears very favourable comparison with the systems pursued on the other side of the Border, where there is no body of high-class professional surveyors with a recognised system of measurement as with us, but where architects measure their own plans, with all the loss of dignity and danger of squabbles which such a system involves,—where clients are punished to the tune of 2½ per cent., where all fair men will acknowledge that 1 or 1½ per cent. is ample remuneration. I say our Scotch system, with its fairness to all parties, clients, contractors, and architects alike, will bear very favourable comparison with the system pursued in England. We are credited among our brethren in the South with a fair amount of self-clampancy. They aver of us that we are so charmed with our end of the island,—what Sydney Smith called our knuckle-end, with all its institutions and usages,—that unless a man can eat porridge, and drink whisky, and take kindly to kilts and bagpipes, he is nought; that, in short, all usages and customs here are perfect, and ought to be imitated by all the world. Our self-gratulation is, unfortunately, not likely to be lowered in connexion with the subject more immediately in hand. The Scotch system of contracting with schedules prepared by respectable surveyors with whom the architect has no monetary transactions whatever is rapidly growing in London, is now in use by all the best men, and I have little doubt that, in course of time, it will extend to all the larger towns of England where the population and business will justify the existence of a body of respectable surveyors.

**An Adopted Suggestion.**—The writer, in a former number of the *Builder*, of an article upon Canadian housebuilding, has received a letter from a friend in that country, containing the following:—"There is something I might mention to you which may be of advantage. In an article of yours in the *Builder* on house-building, lumbering, &c., in Canada, speaking of dust from sawmills, you thought it a pity that it should not be utilised. Some little time ago I saw in a paper that a mill had been started down on the Ottawa for the purpose of manufacturing the sawdust into pulp for various purposes."

## ARCHITECTURAL ASSOCIATION.

THE last ordinary general meeting of this Association for Session 1880-81 was held on Friday, the 10th inst., Mr. Ernest C. Lee, President, in the chair.

### The Obligatory Architectural Examination.

Mr. R. C. Page said that in the annual circular, which all the members of the Association had had, there was a reference to the formation of some classes which it was proposed to start with the view of assisting those members of the Association who wished to present themselves for examination as candidates for the Associateship of the Institute under the system of Obligatory Examination which will come into force next year. The committee had appointed a sub-committee to consider the matter, and that sub-committee had now reported to the committee of the Association in the following terms:—

GENTLEMEN,—In accordance with your instructions we have carefully considered how far the work of the Association can be brought to bear upon the studies of the members with special reference to the Examination of the Royal Institute of British Architects, and beg to report as follows:—

The necessity of a regular and systematic course of study to young men entering the profession is generally acknowledged, and now that the Examination of the Institute defines to some extent what that course of study should be, we consider that it would be of advantage to the members if the work of the Association could be arranged as a means to an end. To some extent the Association, by its classes, already does this, and, therefore, in considering the subject, we have been careful to avoid any interference with the present classes, endeavouring to utilise them as far as possible towards the working-out of a scheme, and supplementing them with other means, such as courses of lectures on the following subjects:—

- (A.) History of Architecture.
- (B.) The Nature and Properties of Building Materials, and their adaptation to Building Construction.
- (C.) Professional Practice.
- (D.) Class for Preparation and Criticism of Plans, Specifications, and Estimates, on the basis of the Class of Construction.

Each of the three courses of lectures to be delivered by some well-known member of the profession, who would doubtless be willing to undertake a course of twelve lectures, or two courses of six lectures each, for a fee of from ten to fifteen guineas. Such fees to be paid by the students in proportion to the number of members attending the respective series of lectures, and if the lectures were divided into two courses for each session, the proportionate amount for each member would be very small.

We would suggest that the existing classes should be utilised as far as possible (without interfering with their independence) for the purpose of enabling the students to turn to practical account the theoretical knowledge acquired from attending the lectures. As the Visitors to the Elementary Class of Design usually arrange their syllabus in historical order, there would seem to be but little difficulty in working their class in conjunction with the course of lectures A, on the History of Architecture, thus enabling the student to put to practical account the teaching of the lecturer.

In a similar manner the Class of Construction might very fitly work in conjunction with the series of lectures B, and the visits to buildings, workshops, and manufactories could be arranged in practical illustration of the subject, while the Advanced Class of Construction syllabus might be framed so as to aid the student in utilising the knowledge acquired from attending the series of lectures C.

If this scheme were tried we are quite convinced that the work of the classes would possess more real interest for the students, and the classes themselves would benefit thereby; but we think it should be quite understood that although the subjects for the classes might have reference to the Examination, they should be arranged in the same way as at present, and for the benefit of members in general, and not exclusively for those preparing for the Examination.

It is proposed that the lectures should be rather for the purpose of indicating a course of study than exhaustive discourses, and that each subject should be divided into two courses, Elementary and Advanced, in each session, but so arranged that one course should be attended one session, and the other the next; and if the lectures alternated, one being given each fortnight, it would allow one month between each lecture for preparation.

As an incentive to study, we would propose that prizes be offered by the Association of the value of five guineas,—three guineas for the first and two guineas for the second-best result of the series of lectures: such prizes to be awarded on the recommendation of the lecturer. We would further propose that at the end of each course an examination should be held by the lecturer in order to test the knowledge and diligence of the students.

We would suggest that the whole scheme be announced to the members through the medium of the "Brown Book," and that they be invited to co-operate with the Committee in an endeavour to enlarge the work of the Association, so as to be of especial benefit to intending candidates for the Institute Examination; and that the papers for the Examination of the Royal Institute of British Architects be printed in the "Brown Book."—We are, gentlemen, yours obediently,

J. DOUGLASS MATHEWS,  
E. B. L'ANSON,  
S. F. LINT CLAESSES,  
ERNEST C. LEE.

T. ROGER SMITH,  
ALFRED CONDER,  
COLB A. ADAMS,  
RICHARD C. PAGE.

The President invited the co-operation of all the members of the Association in carrying out the recommendations contained in the report, and Mr. Page, in answer to a question, said that the names of the presidents of the classes and of the committees of Visitors to the classes would be invited to join the sub-committee.

### The Association Travelling Studentship.

The Secretary next read the report of the

judges in the first competition for the Architectural Association Travelling Studentship, which was as follows:—

We have carefully examined eight sets of drawings, submitted by the following gentlemen:—H. O. Greenwell, A. W. Cross, E. F. G. Hooper, G. H. Ince, H. H. Kemp, C. H. Marshall, W. A. Pite, and G. S. W. Tappen. We think we may fairly congratulate the Association upon the general excellence of the work, especially in view of the fact that but a short time has elapsed since the foundation of the studentship was announced. This is now the most important of the many prizes the Association has to offer to its members, and while we venture to think that the response the first invitation has called forth cannot fail to be gratifying to all the contributors to the fund, we trust that in future years a still higher standard of excellence may be attained, and also that the interest in the competition may be still more widely diffused. Some of the competitors have failed to adhere in all particulars to the conditions; but, availing ourselves of the liberty given to the judges for this year by the notice appended to the sheet of instructions, we have not placed too strict an interpretation upon the rule regulating the number and description of the drawings to be submitted. It may be well, however, for us, in the interest of all who may be looking forward to future competitions, to call attention to the fact that hereafter all the conditions will be most strictly enforced.

We have unanimously awarded the Studentship for 1881, to be accompanied by the Bronze Medal of the Association, to Mr. Henry Hardie Kemp, and on the evidence of his drawings we fully believe he will make the best possible use of the opportunity for further study and progress.

We also recommend to the Committee that prizes be awarded to Mr. Francis G. F. Hooper and Mr. W. Alfred Pite, for the admirable series of drawings submitted by each of those gentlemen.

THOMAS HENRY WATSON,  
GEO. VIALS,  
ERNEST C. LEE.

Mr. Kemp was introduced to the President and congratulated upon his success, as were Messrs. Hooper and Pite, the President announcing that the Bronze Medal of the Association and two guineas would be awarded to Mr. Hooper, and the Bronze Medal to Mr. Pite. Had the funds permitted, the awards to the second and third competitors would have been more substantial, and it was hoped that further subscription would enable the judges next year to increase the amounts.

### Election of Officers for Session 1881-2.

Messrs. A. J. Gale and F. G. F. Hooper were appointed scrutineers of the balloting papers for the election of officers for next session. On their return to the room later in the evening they reported that the following gentlemen had been elected, viz:—

President.—Mr. Aston Webb.  
Vice-Presidents.—Messrs. G. R. Redgrave and L. C. Bidder.  
Committee.—Messrs. C. A. Adams, E. C. Lee, C. Henman, R. E. Pownall, H. H. Stannus, E. B. L'Anson, E. G. Hayes, R. C. Page, C. B. Pisk, and T. E. Colcott.  
Treasurer.—Mr. J. Douglass Mathews.  
Assistant-Treasurer.—Mr. T. Williams.  
Secretaries.—Messrs. F. E. Eales and W. H. A. Berry.  
Librarians.—Mr. H. W. Pratt.  
Assistant-Librarians.—Messrs. R. L. Cox and W. Barrell.  
Solicitor.—Mr. Francis Truett.  
Auditors.—Messrs. Smith and F. H. A. Hardcastle.  
Registrar.—Mr. T. H. Watson.

Mr. J. Douglass Mathews, in proposing a vote of thanks to Mr. Lee for his services as President of the Association, and to Mr. R. C. Page, the retiring honorary secretary, congratulated the former gentleman upon the success of the movement initiated by him at the opening of the session for the establishment of a Travelling Studentship in connexion with the Association. The success of that movement spoke well not only for the enterprise and zeal of the retiring President, but for the liberality with which his appeal had been responded to by members of the Association, who had subscribed all the money amongst themselves. Mr. Page, the retiring honorary secretary, had been indefatigable in his labours, and was eminently worthy of the thanks of the members for his services.

Mr. Gotch humorously seconded the proposition, which was carried with much applause, and the President and Mr. Page briefly replied.

The President then read a paper by Mr. R. Corbett (who, being in Italy, was unable to be present) on "Colour Decoration as applied to Architecture, from a Painter's point of view." This we print on another page.

Mr. Stannus, in moving a vote of thanks to Mr. Corbett for the paper, supplemented and explained it by reference to a number of engravings and chromolithographs which he had brought and hung up in the room for the purpose. With regard to the Sistine Chapel a large engraving from Dolobono was pointed to as showing the general arrangement of the whole ceiling and cooves, some engravings by Giorgio Mantovano showing some of the large figures in greater detail. With regard to the ceiling of the Camera della Segnatura, in the

Vatican, the chromolithograph published by Griner was exhibited as showing the setting-out and detail of the work. Mr. Stannus observed that Mr. Corbett had not alluded to the fact,—which should be more generally known,—that the design and beautiful arrangement of the ceiling were due to a Senese artist named Bazzi, and not to Raffaele. It would be information to some of the members of the Association that a very beautiful copy of this ceiling, about two-thirds full-size, existed in England, at the back of the Italian Court at the Crystal Palace. Although blocked up by subsequent screens, &c., which scarcely allowed any light to get to it, it would well repay the trouble spent in visiting it, as it was executed by no less a man than the late Alfred Stevens, the author of the Wellington Monument, in St. Paul's. With regard to Raffaele's ceiling in the *Stanza of Heliodorus* in the Vatican, Mr. Corbett, although taking objection to some minor defects of the design, did not allude to its radical defect, i.e. the treating a groined roof as though it were a domical one. Now, there were four typical methods of roofing a square apartment, viz.—(a) with flat ceiling, and no cove; (b) with flat ceiling and cove; (c) with dome; and (d) with groin; and each of these methods of roofing had its characteristic type of decorative treatment. In this *Stanza of Heliodorus*, the angle-ribs of the groin, resulting from the interpenetration of two semicircular barrel-vaults, left four triangular spaces to be dealt with, and all who knew the beautiful work at Assisi would remember how well Giotto had treated similar spaces there. In the Heliodorus ceiling the attempt to make a circle in plan had utterly failed; it resulted in a crippled effect which was very unsatisfactory, and only served to point a moral for those who were given to sneering at all Renaissance art. The photographs exhibited were from the gallery of the Farnese Palace decorated by Annibale Caracci, and they would be useful in showing the logical development, though not by any means the lowest step, of the system practised by Michelangelo. The engravings of ceilings from Versailles and the new Opera-house at Paris served to show how the modern French artists had thrived on their instruction. With regard to the Villa Madama, Mr. Stannus showed two engravings and an unfinished sketch giving the delicate details of this work; also an original design by Stevens showing the distribution mentioned by Mr. Corbett, and a photograph of a portion of ceiling in one of the rooms of the Cancelleria, exhibiting the elaborate plaster-work,—much of it done *in situ* by the operative. In a description of some plaster-work executed by Messrs. Jackson & Sons, of Rathbone-place, he (Mr. Stannus) had previously alluded to this practice of modelling the wet plaster *in situ*, the tradition of which had never died out in Italy. When in Venice lately he saw them doing this work in a way that would have put our own eighteenth-century plasterers to shame. With regard to the loggia of the Vatican, the coloured views and photographs shown gave a general idea of them, and the engravings by Camporesi and Volpato showed more in detail the flowing lines in the pilasters to which exception had been taken. The rubbing shown of some of the ornament on a tomb at Santa Maria del Popolo exhibited the perfect fitness of flowing lines on horizontal surfaces. It was from a floor slab of a member of the Chigi family. Mr. Stannus also exhibited rubbings from floor-slabs in the Capella Emiliana and the Frari at Venice, and in San Giovanni Evangelista at Brescia, exemplifying the good effect of flowing lines on horizontal surfaces. The photograph exhibited of a portion of the "Crucifixion," by Fra Angelico, at San Marco in Florence, afforded an illustration of the difference of gauge in figures,—the figures in circles below being smaller than those in the main picture. The coloured engraving, by Griner, from Santa Maria del Popolo illustrated the points mentioned in the paper. It might be said that, when kept without delusive realism in strong chiaroscuro, figures were not objectionable in similar positions; but the cast shadows tended to produce an uneasy effect on the beholder. Mr. Stannus also exhibited views in two of the rooms of the Farnesina. The entrance loggia was decorated by Raffaele with episodes from the fable of Psyche; and the gallery towards the Tevere was decorated by Peruzzi, the architect of the building. These served as an instructive study of decoration as practised by painters and by architects. Mr. Corbett had not commented on the work in that building,

nor had he touched upon one most important point in dealing with figure-design on curved surfaces when the figures were large in proportion to the radius of the curve. In the Albani ceiling in the Torlonia Palace, the smallness of flat surface and the largeness of cove were observable. Here there had been no attempt to diminish the pendentives at the top, and to increase the (apparent) size of flat; and the figures were too large, filling the whole curve, "oversailing," and appearing ready to fall out upon the spectator. A good rule, in such cases, would be that figures, if upright, should not be larger than the lower half of the quadrantal curve of cove or dome. The cupola in the Certosa of Pavia further exemplified this principle. Here the figures were sitting or kneeling, and were kept low, while the remainder of each division was filled by clouds, &c., with "a lap of inspiration" hanging over the head of each. The dome of the Chigi Chapel in Santa Maria del Popolo showed Raffaele's treatment, from which Mr. Edmund Oldfield, F.S.A., had observed that the inference might be drawn that Raffaele "avoided introducing high, upright figures (which, from the sharpness of the curve, would be seen partly foreshortened, partly not, and therefore apparently in false drawing), but made the upright figures which personify the planets only half-length, and kept the full-length figures, which represent their attendants, in reclining or nearly horizontal positions, showing thereby a subtle observation of local requirements which is full of instruction." Mr. Stannus said he could not better conclude than by referring the members to the Introduction (especially Part IV., on Painting and Sculpture) to Mr. Fergusson's fine "History of Modern Architecture," for there would be found, in the space of eight pages, instruction of the greatest value on the subject.

Mr. G. R. Redgrave, in seconding the vote of thanks (in which he included the name of Mr. Stannus for the illustrated appendix which he had made to the paper), observed that it struck him that the paper might have usefully contained some further reference to the architectural treatment of the Pompeian paintings, which were really painted architecture, and, notwithstanding its difficulty, was admirable work. With regard to scale of figures, the Gothic sculptors, he thought, generally used scale in a very wise way, making the important figures in their composition to a large scale, and keeping their minor figures to a smaller scale. The same thing was to be observed in the mural paintings of the Mediaeval period.

The resolution was carried, and so the proceedings of the session terminated.

#### SANITARY PLUMBING.

##### TRAPS AND TRAP VENTILATION.

MR. STEPHEN HELLYER's third lecture\* of the course of six lectures to working plumbers, under the auspices of the National Health Society, was delivered on Tuesday evening last. There was no diminution in the attendance. Professor Corfield was in the chair. The lecturer, in his introductory remarks, observed owners of mansions and parks were often more generous to their enemies than to their friends, for they warned poachers by writing up "Beware of man traps!" although they never warned their guests by writing up "Beware of foul traps, which breathe out noxious gases!" There might be only a man-trap here and there where poachers might come, although there might be dozens of foul traps in and about the house where the guests were likely to be found daily. Moreover, man-traps did not kill: they only caught a would-be thief, and bruised his leg a little; but foul traps not only caught a friend,—at times they gave him illness, perhaps typhoid fever, and even death. It was, to the lecturer's mind, a most iniquitous thing that, when soil-pipes, waste-pipes, and drains needed to be trapped off (as they always did), such filth-collecting boxes as D-traps, bell-traps, cess-pool-traps, and manhole-chain-syphons, should be used. Malignant spirits were formerly supposed to,—among other ways of working mischief,—take the form of bad smells. One could well imagine their delight at finding such congenial lodgings to lurk in as were afforded by such appliances. Or did they have a hand in the mischief even earlier, by suggesting the

forms of such traps to their devisers? Some people were now condemning the use of traps altogether. It was true that such anti-trap men were few and far between, but the fact that men were to be found preaching against the use of traps, and practising what they preached (for in their works they did not fix traps to sinks, lavatories, or water-closets), called for some notice. He was most strongly of opinion that the advocates of such open (untrapped) pipes were utterly wrong in their teachings. When waste-pipes were fixed without traps, what was to prevent them acting as ventilating-pipes to the house? especially when one end of the pipe was in a warmer and more rarefied air than the other, which would generally be the case,—one end being connected with the sink, lavatory, or water-closet inside the house, and the other end being open to the colder and heavier air outside.

The fact was that directly such pipes completed their legitimate work,—that of conveying waste discharges,—they became ventilators, and helped to feed the fires and house with air of questionable freshness or purity. Of course if such waste-pipes could be kept perfectly sweet (a thing practically impossible), no danger could arise from such an arrangement, and it would save the trouble of opening the windows. A waste-pipe from a sink or lavatory, and still more from a urinal, could not help getting foul. Take the case of a scullery-sink,—the general sink in small and moderate-sized houses. The servant threw down into this sink a body of green-water hot from the saucepan, and, before the waste-pipe was dry, she turned a tub of hot greasy dish-water into the sink, with the washings-out of the dripping-pan. Then she washed her hands in a bowl, using plenty of soap, of necessity, to get her hands clean, and the bowl of soapy water was emptied into the waste-pipe, the suds adhering all the way down the pipe to the greasy matter already deposited upon it, and bubbling off in bad air to come back again into the house. Would any of the anti-trap men drink a glass of water after it had passed through such a waste-pipe? Assuredly not. Yet they did not mind the occupants of the scullery (or wherever such sinks were fixed) breathing the air which came through such filthy pipes. No lavatory or sink should be fixed (whether the waste-pipes from them were trapped or not) which would not allow a body of water to be sent through them to more than fill the bore of the waste-pipe, for all sorts of matter was at times emptied into such fittings, and unless good and efficient water flushes could be sent through them to cleanse it away, such matter adhered to the interior of the waste-piping and decomposed there. In a gentleman's house, only recently built, and with its sanitary arrangements carried out under the rules laid down by the Local Board of Health for the Croydon district, the lecturer said he had a test made to see the quantity of air which passed in an ordinary way through an untrapped waste-pipe. An anemometer was fixed on the grating over the top of a 2 in. untrapped waste-pipe of the scullery sink, and between the hours of nine p.m. and seven a.m. on the following morning (in the first week of the April of this year), the anemometer registered 8,205 lineal feet of air as having come into the scullery through the sink-waste, or an average of 820 ft. (lineal) per hour. Of course, the air which passed in through the waste-pipe did not remain in the scullery, but passed to other parts of the house, to be breathed by its occupants. Passing on to speak of water-closets without traps, the lecturer said nobody attempted to fix a water-closet without having some sort of seal between it and the soil-pipe; and though anti-trap men dispensed with the water-seal (or trap), they did not fix water-closets without some mechanical means of shutting off the soil-pipe from the closet,—i.e., somewhere in the closet, or on the basin-outlet, they contrived to fix an indiarubber or metal valve, plug, or stopper, to prevent soil-pipe air coming into the house through the closet. There were now several methods of fixing such untrapped water-closets and soil-pipes, and if he were asked to say which of those methods he considered the most sanitary, he should say that known as Mr. Norman Shaw's. In a letter that he (the lecturer) sent to the *Builder* in March, 1878,\* he condemned that method, and gave his reasons pretty fully. Mr. Norman Shaw made his soil-pipe only 3 in. in diameter, and therein he was quite right, as a 3-in. pipe could be kept more

\* For reports of previous lectures see pp. 651, 711, ante.

\* See *Builder*, vol. xxxvi., p. 225.

wholesome than one of a larger size. But, if filth could and did accumulate upon the interior of sink and lavatory wastes, if wastes used for the conveyance of mere dirty water got foul, how much more foul must pipes which took away excremental discharges get? He was willing to admit that if large and efficient water flushes were sent through the soil-pipes after each usage of the closet, such an arrangement as that of Mr. Norman Shaw might be kept tolerably wholesome; but if the closets were used with inefficient water flushes,—as would often be the case,—the soil-piping must in time become very offensive. The handle of a water-closet apparatus was often pulled only just sufficiently to discharge the contents of the basin into the soil-pipe, leaving the deposit which escaped out of the closet-basin, with whatever water there was in it, to stain its way down the interior of the soil-pipe to the drain; and then, as the basin-valve would be closed, there would be no flush of water to follow it to cleanse the filth away, but the excrement would be left to corrode upon the pipe. Again, however learned a person might be in the art of pulling-up a closet handle so as to give a free passage to the out-going matter and to well open the flushing valve, there would at times be no water in the supply-pipe to come into the closet to cleanse it. The water supply sometimes failed (1) because some leaky valve had leaked all the water out of the store cistern; (2) because repairs were being made to the company's main, and the water did not come in; (3) because the supply-valve or water-waste preventer was out of repair; or (4) because the water in the pipe was frozen. If the latter was the cause of there being no water, the fault was peculiarly that of the plumber, who ought not to have fixed his service-pipe where it could freeze. Another source of fouling a soil-pipe was that of using a water-closet as a urinal, in which case the standing water, largely impregnated with urine, overflowed down the overflow-pipe into the soil-pipe, and corroded upon it, for it was only rarely, in such cases, that the handle of the closet was pulled. He had known many soil-pipes to ladies' water-closets,—e.g., at railway stations,—to get so furred that the bore had been reduced to one-half its original size after a few years' usage. Whatever mechanical means were used in untrapped water-closets for excluding soil-pipe air from the house, they were sure, at times, to fail. In the case of water-closets with metal seatings, india-rubber valves, or plugs, there were several ways whereby a failure might arise. For instance, the mechanism itself might fail, or a piece of paper or other matter might get between the valve and its seating, causing the water to escape out of the closet basin, and so leave an easy passage for the admission of soil-pipe air to the house. There were other evils attending such a system as that of Mr. Norman Shaw, such as (1), the danger of frost at exposed points; (2), the difficulty of limiting the length of the soil-pipe, for circumstances would require it to be of various lengths, and careless people would put no limit to it. Architects did not gain their reputations by designing the elevations of their buildings to suit water-closets. In some buildings the last thing to be considered was the water-closet, and so it got stuck anywhere where there was room for it, without reference to the drainage from it. The vitiated air in a long length of soil-pipe arm necessary to avoid a porch, oriel window, or other projection, would often escape into the house through an open basin-valve or imperfect seating. Having condemned what was, in his judgment, the more sanitary method of the two or more systems of fixing untrapped closets, the lecturer called attention to what he regarded as a more dangerous method still. It was within his knowledge that the plumbing and so-called sanitary arrangements of a nobleman's mansion had been carried out on principles which he was about to explain, and that, too, within the last twelve months. He did not know who was responsible for introducing stacks of soil-pipes with trapless water-closets upon them, but he believed it was the outcome of two or three would-be sanitarians. A tier of trapless water-closets was fixed on one stack of soil-pipe, and that stack of pipe, having one, two, three, or four water-closets upon it, might, or might not, be trapped at the bottom. By some men it was trapped and ventilated at top and bottom, but by others it was not trapped at all. In the nobleman's house referred to, the soil-pipes were not trapped off or disconnected from the

drain, though the drain was open to the atmosphere somewhere in the grounds. By that system a drain was brought into the house, and branches from it were carried up under the floors to receive the various stacks of soil and rain-water pipes. The drain was carried some distance away from the house before it was exposed to the atmosphere, and the several stacks of soil-pipe were continued up through the roof full-size for ventilation, with cowls upon them. With such an arrangement there would often be no ventilation at all in one or more of the stacks of soil-pipe. It would, therefore, be quite possible for one or more stacks of soil-pipe to become filled with bad air, and in case of a defective basin-valve or an absence of water supply, a stack of such soil-pipe, with a tier of trapless water-closets upon it, might ventilate itself, and the drain too, into the house. Having shown the necessity of trapping, the lecturer proceeded to discuss the best means of doing it. He observed that all that was wanted in ventilated waste-pipes and drains was a water-lock. No sanitary fitting, waste-pipe, soil-pipe, or drain should be trapped in a way that would not admit of the whole of the water in such traps being entirely changed every time a flush of water was sent into them. Traps should only be required; to act as air-barriers, to ward off the air travelling through the pipes, and to prevent it from entering the house. But traps used for that purpose were often so badly constructed, and the principles on which they were made were so radically wrong, that they both collected and held their filth, and became little cesspools. Such a trap was the D-trap. It was only fair, however, that he should say that one reason why some plumbers preferred the D-trap to the syphon was, that it was not easily syphoned out like the latter. About the first form of trap used, the lecturer believed, for fixing under water-closets, was the syphon or round-pipe trap,—i.e., a pipe bent and re-curved in the shape of the letter S; but as that trap in usage was easily syphoned, and plumbers had not learned the way of preventing such syphonage by ventilating it, the D-trap was invented. He was able to say that the lead syphon trap was used under a water-closet as far back as 1775,—more than a century ago; but, as far as he could make out, the D-trap was not in use until 1790. Having shown specimens of foul D-traps, and illustrated, by experiment, the difficulty, if not impossibility, of properly flushing-out such traps, the lecturer went on to speak of the bell-trap, which, he said, could vie with the D-trap in the amount of evil it had achieved. Indeed, it would perhaps be impossible, in connexion with drainage matters, to find two more fruitful sources of evil than the bell-trap and the D-trap. The bell-trap was a non-cleansing trap, and was very inefficient on account of the movable top (which when removed left no trap at all), and of the slightness of the dip or seal. Of other non-cleansing traps, as well as of those which were self-cleansing, he would speak in his next lecture.

A gentleman in the meeting, who described himself as having been a plumber for very many years, asked whether discussion was allowed. On receiving a reply from the chairman in the negative, he said he thought it was very unfair that all that Mr. Hellyer said should go forth to the world as "gospel." He differed very materially from a great deal that had been said by Mr. Hellyer. The prohibition of discussion was not giving the trade a fair chance.

The Chairman observed that possibly the National Health Society would afford opportunity to the gentleman to give a lecture or lectures in reply to Mr. Hellyer's lectures. At any rate, objectors to Mr. Hellyer's views might urge their objections through the medium of the press. He (the Chairman), for his own part, agreed with almost every word Mr. Hellyer had said, particularly as to the necessity of having traps, although not such badly-constructed ones as D-traps and bell-traps, which could not be too strongly condemned.

The lecture was repeated on Wednesday evening.

**Cork.**—At the last weekly meeting of the Cork Board of Guardians, five candidates were proposed for the vacant office of architect, &c., to the Board. Mr. D. J. Conkley, A.R.I.B.A., of Grand-parade, Cork, was elected by a majority of eight votes over the combined votes for the other four candidates.

## FROM ABROAD.

An exhibition of building appliances and materials is announced to take place at Brunswick. It commences on the 1st of July, and closes on the 1st of October. It is intended to represent objects connected with building in their different forms of application, and machinery in motion will be a distinctive feature of the exhibition. For the purpose of facilitating the comparison of the progress made in different branches of the trade, it is intended to borrow specimens of articles connected with building science both from private and public collections. Arrangements are being made with the Government authorities for the purpose of giving prizes to exhibitors of objects showing inventive talent.

The recently-published will of the late Carl Scheibler of Lodz contains the following bequests:—

1. The sum of 60,000 roubles for the building of a gymnasium or public school, provided that the Government sanctions its establishment, and that the city gives a site. The amount to be paid according to the progress of the building.
2. The sum of 10,000 roubles to found five scholarships of the annual value of 100 roubles each, intended for students of the working class attending the gymnasium. The choice of these students is left to the director.
3. The sum of 8,000 roubles for the poor-house.
4. The sum of 25,000 roubles for the Catholic Church.
5. The sum of 50,000 roubles towards the erection of the new Evangelical Church.
6. The sum of 10,000 roubles for the Orthodox Greek Church.
7. The sum of 15,000 roubles for the erection of a synagogue in the city.

Numerous other bequests follow of a charitable nature. The above extract will show that the great industrial proprietor we have named was impartial in his religious views, and his distribution of this portion of his worldly goods has no doubt met with the special approbation of those interested in building matters in his city.

## FOREIGN AND AMERICAN SERIALS.

The *Wiener Zeitung* (Vienna, May 29) states that in the coming winter session special courses of lessons will be given at the Technical Trade Museum in Vienna, on the following subjects:—Builders' wood-working and joinery, basket-making and wicker-culture. A course of advanced instruction for cabinet-makers commences on October 1st, in connexion with the workshops for practical training.

In the issue of June 1 is given an abstract of the annual report of the Company for the Construction of Cheap Dwellings. A small profit was shown, but not sufficient to justify the payment of a dividend. The Vienna Building Company, on the other hand, showed a very large loss on the year's working.

The *Zeitschrift des Vereines Deutsches Ingenieure* (Berlin) for May gives an illustration and description of the Kraft cement-testing machine. The briquette is placed in two jaws, the strain being applied by a screw. The principle is that of the dynamometer, the breaking-strain being registered on a dial. The price of the machine is 144.

La *Revue Scientifique* (Paris, May 28) contains the first of an interesting series of papers by M. E. Maindron, on the history of the French Academy of Science, which is continued in the issue of June 4, commencing from 1666, when reports of the meetings of and business transacted by the society were first regularly taken. M. Maindron gives a sketch of the work done by the Academy, a list of some of the leading scientific men who have been leaders of it, with the charters granting various privileges. Altogether, the two papers form an interesting and valuable record of the Academy.

According to *Science* (New York, May 21), a new department has been added to the American Museum of Natural History, which will contain specimens illustrating the economic botany of all the woods of the country used for architectural or building purposes, or in the manufactures.

The *Boston Journal of Commerce* (May 21) contains an article on the art of brick-making, in which it is pointed out that there are few articles of manufacture which receive so little attention, and yet that few are of more import-

ance. It expresses the opinion that the quality of bricks does not depend upon the manner in which they are made, or burnt (as is generally supposed), but on the material of which they are made. As a proof of this, it instances the "Old-Roman brick," which is considered to be perfectly fire-proof and imperishable. It is proof against frost, salt, or sea-water, and can be made almost as cheaply as the ordinary building-bricks.

#### PLYMOUTH ART-EXHIBITION.

This exhibition, a correspondent writes, has proved quite a success. Art is well represented, and there are many good examples of painting on china and terra-cotta by ladies and professional artists. Among the water-colour drawings the following are exhibited:—T. Cox, London, design for stained-glass window; W. Tipping, design for art tiles and stained-glass window; J. C. Tully, design for oak cabinet; J. R. Saffling, design for stained-glass window. Good specimens of carving are exhibited: five art-carved panels in walnut, early in style, by J. Lomon, Exeter; carved panel and carved frame, "Christ at the Well," and the "Woman of Samaria" by J. Bickley; carved Glastonbury chair, by Miss Ellis; carved table, by Mrs. Kirwin. Many good examples of fret-work are exhibited: "The Seven Ages of Man" and "The Start and the Return," by J. Sparrow. Amongst the various articles of fret-work are, a model of a state chariot, various baskets, brackets, bird-cages, and what-not, in various designs. In furniture, D. Kingdom, Plymouth, exhibits a bedroom suite, in Pensacola pitch-pine, in the Medieval style. There are also many good examples of oil and water-colour paintings exhibited.

The exhibition closes on the 20th of June.

#### VOTES FOR PUBLIC WORKS.

##### BUILDINGS FOR THE CIVIL SERVICE.

The House of Commons, in Committee of Supply on the 9th inst., agreed to the following votes for buildings connected with the Civil Service and Revenue Departments, viz.:—Sum to complete the vote of 15,980l. for furniture of public offices; sum to complete the vote of 228,515l. for Revenue Department buildings; sum to complete the vote of 55,495l. for County Court buildings.

On the vote to complete the sum of 10,013l. for the Metropolitan Police Courts, Mr. Rylands moved to reduce the vote by 2,000l., the cost of alterations and additions to the Hammersmith Police Court. He contended that the sum he had named ought to be provided out of local rates. After a discussion the amendment was withdrawn, and the vote was agreed to.

A vote to complete the sum of 7,195l. for Sheriff Court-houses, Scotland, was agreed to.

On the vote to complete the sum of 120,200l. for the New Courts of Justice, &c., Sir A. Lusk asked when there was any prospect of the Courts being finished, and what their cost would be. Mr. Shaw-Lefevre said he had every reason to hope that the Courts would be completed by August next year. He believed next year's vote would not exceed that of the present year. The vote was then agreed to.

On the vote to complete the sum of 125,000l. for the survey of the United Kingdom, Mr. Rylands commented on the very large increase of the vote that had been made in consequence of the desire of the House to accelerate the survey. Mr. Shaw-Lefevre explained that while the votes had been increased only 25 per cent., the work done during the past year exceeded that of the preceding year by as much as 80 per cent. He hoped that the entire survey would be finished by the end of the year 1890. Sir A. Lusk remarked that the face of the country changed so rapidly that it was necessary to publish each completed portion of the survey as rapidly as possible. The vote was agreed to.

On the vote to complete the sum of 22,141l. required for the buildings of the Science and Art Department, Mr. Dillwyn characterised the establishment at South Kensington as overgrown, and to a great extent useless, and complained that the sum asked for increased every year. He hoped that the Government would give an assurance that after the present year the expense under the head of "building" would be discontinued. Sir Henry Holland hoped the Government would not be influenced by the statements of the hon. member, who had

probably not been to South Kensington lately. If he had, he would have found it filled with people who took the greatest interest in the works of art exhibited there. He did not think it an overgrown institution, and the money expended on it was well laid out. Mr. Shaw-Lefevre said that all the assurance he could give the hon. member for Swansea was that there was not any present intention of asking for a larger sum. The South Kensington Museum was extremely popular; if they were to judge by the numbers who visited it, there was no institution in the metropolis more appreciated. As to the 1,000l. a year for rent, the gallery belonged to the trustees of the Exhibition of 1851, and the Government thought 1,000l. a year very much less than the value. Mr. Rylands said that the item of 1,820l. for salaries of architects and assistants ought to come under the sub-head of salaries rather than of new buildings. He wanted to know whether there was anything in the duties of the director of new buildings at South Kensington which could not be fulfilled by the Board of Works. Lord F. Cavendish said that the architect at South Kensington had been retained to complete certain works in hand. Mr. A. O'Connor complained that the architect of works at South Kensington appeared to be paid in proportion to the length of time which the work occupied, and asked whether some arrangement could not be made by which that officer should be paid by the job. Lord F. Cavendish explained that the reason why the new buildings at South Kensington had not been executed more rapidly was not any want of zeal on the part of the architect, but because the Treasury had endeavoured to cut down the expenditure on them as much as possible. After some further conversation, the vote was agreed to; as was also a sum to complete the vote of 6,523l. for the British Museum Buildings.

On a sum to complete the vote of 45,858l. for the Natural History Museum, Mr. Dillwyn complained that although the original estimate for that museum was 350,000l., and the revised estimate was 409,000l., a further demand was now made on the public to provide for a collection of objects to be preserved in spirits, and for certain other additional works. He thought they ought to look with some jealousy on further schemes for the extension of the establishment at South Kensington; and as they were not properly informed of what the increased outlay in the present case was required for, he moved that the vote be reduced by the sum of 17,043l. Mr. Shaw-Lefevre said the new building was an essential part of the Museum. Mr. Dillwyn's amendment was rejected by 66 to 17, and the vote was agreed to.

The vote to complete the sum of 20,000l. for Edinburgh University buildings was agreed to.

On the vote of 10,609l. for harbours and other matters under the Board of Trade, Sir G. Balford reminded the committee that a sum of no less than 800,000l. had been expended in constructing a pier at Dover, and yet so unsatisfactory had the work proved to be, owing to a defective mode of construction, that a considerable expenditure had to be incurred to repair damage that ought not to have occurred. The vote was agreed to.

The vote to complete the sum of 193,926l. for public buildings in Ireland was agreed to.

The next vote was to complete the sum of 10,000l. for science and art buildings, Dublin. Mr. Gorst protested against the practice of spending money on new buildings for the total cost of which no estimate had been presented. Sir R. Cross thought it had been long ago settled in principle that no new buildings should be begun without an estimate for the whole cost. The vote ought to be withdrawn, unless the noble lord was prepared to say what sum of money was to be spent from first to last. Lord F. Cavendish quite agreed with the doctrine that had been laid down by the right hon. gentleman, but the circumstances of the vote were peculiar. It had been understood for some time past that the buildings in question were to be erected, but their site had not been fixed upon until after a long controversy. The vote was now necessary, but he hoped to present the complete estimate before the end of the session. Mr. Gorst moved the reduction of the vote by the sum of 3,500l., the amount of an item for commencing the erection of a museum of science and art in Dublin. Major Nolan complained of the opposition offered to the vote for science and art in Dublin, while such very large sums for similar purposes in England were granted. Mr. Mun-

della explained that when the present Government came into office one of the first things that was pressed upon them was the carrying out of a pledge given by their predecessors that a science and art museum should be erected in Dublin. The whole question was where the site of the building should be, and it was only within the last week that the Government were in a position to say that Kildare-street should be the site fixed upon. Not a day would be lost by the Department in pushing forward the work. Mr. Gorst suggested that progress should be reported, in order that the Government might have an opportunity of consulting an architect upon the question of the cost of the buildings. Mr. Magniac hoped the Government would not consent to report progress. The sum necessary for the foundations of the buildings might well be granted by the Committee without any infringement of the rule of economy. Mr. Piddie thought an estimate of the cost of the buildings might easily be obtained from the surveyor in the employ of the Board of Works. The vote was agreed to by 97 to 30.

#### OBITUARY.

Mr. S. A. Hart, R.A.—Mr. Solomon Alexander Hart, R.A., librarian of the Royal Academy, died on Saturday last, the 11th inst., aged seventy-five. Born at Plymouth in 1806, he was the son of Mr. Samuel Hart, who, while apprenticed to a goldsmith, studied art, and afterwards painted under Northcote in 1785. His father having removed to London, Solomon Hart entered the Royal Academy as a student in 1823, and exhibited his first work, a miniature of his father, in 1826. He continued for a time to paint miniatures for a livelihood, but showed his first exhibition oil picture, "Instructions," at the British Institution, in 1833, and the "Elevation of the Law," which was purchased by Mr. Vernon, at the Suffolk-street Gallery, in 1830. Among succeeding pictures were "Wolsey and Buckingham," 1834; and "Cœur de Lion and the Soldan Saladin," 1835, which led to his election as an Associate of the Royal Academy. In 1840 he was elected a Royal Academician. During a visit to Italy, in 1841-2, he made an elaborate series of drawings, originally intended for publication, of architectural interiors and sites famous in history. Mr. Hart employed the materials then collected in several pictures, among which were "Dinner-time in the Refectory of the Convent of the Ognissanti, Florence," "Interior of the Cathedral at Modena," and "Interior of the Cathedral at Pisa," and "An Offering to the Virgin." In 1857 he succeeded Mr. Leslie as professor of painting in the Royal Academy, and in 1865 was appointed by the Queen librarian of that body. In the present exhibition of the Royal Academy he has a picture of "A Hoarder." Mr. Hart was buried on Tuesday last, at the Brompton Jewish cemetery.

Mr. John Collier.—We regret to announce the death of Mr. John Collier, of Salters' Hall, St. Within's-lane, which took place on the 3rd inst., at his residence, Wychood, Putney. He held the appointment of surveyor to the Worshipful Company of Salters for eighteen years, and many buildings were erected for them from his designs. He was also an Associate of the Institution of Civil Engineers, and a Member of the Institution of Surveyors, besides holding several public appointments in the City. The following are some of the buildings designed and carried out by Mr. Collier:—Railway Works, Goswell-street; Offices in Coleman-street, for Mr. Charles Morrison; Salters' Almshouse, at Watford; Witney Corn Exchange; Athall Vicarage and Schools; and the new City Press Offices.

Mr. William Paterson, C.E.—Mr. William Paterson, C.E., whose name for many years has been identified with some of the leading engineering undertakings in the North of Scotland, died at his residence at Larkfield, Inverness, on the 29th ult.

Alderman Sir W. A. Ross died suddenly on the 9th inst., while in his carriage on the way to the City. He seems to have been the architect of his own fortunes. Having been educated at St. Olave's Grammar School and at the London University, he started in business for himself as an oil-refiner, taking the ground floor of one of the houses occupied by him in Queenhithe. As the business extended, and he obtained the royalty of some important patents,—especially the anti-friction grease used for railway-carriages,—the whole house was

secured, and, in course of time, the adjoining house as well. He was Lord Mayor of London in 1862, and had the honour of receiving the Princess Alexandra into the City on her arrival in this country to become the wife of the Prince of Wales. He was in his 61st year.

#### MONUMENTAL.

A MEMORIAL to those officers and men of the 13th (Somersetshire) Regiment, who were lost in the South African war, and also as a record of the regiment, has just been erected in the north transept of Wells Cathedral, by General Lord Mark Kerr, G.C.B., the colonel, and other officers. The composition is in five panels, the central one higher and wider than the rest, having a slightly-projecting canopy carried on carved corbels. This contains a representation in terra cotta of David after he has slain Goliath, a subject peculiarly appropriate to the history of the 13th Regiment, which so frequently has been victorious in spite of superior numbers of the enemy. This is the work of Mr. Tinworth, of Doulton & Co.'s. The architectural portion of the monument has been designed by Mr. Edmund B. Ferrey. Each panel is arched and trefoil-cusped, and is pedimented with a carved flourish. There are blue glass shafts with moulded capitals. Between the window-cill of the north transept and the before-mentioned canopy is a rich sculptured frieze of foliage and simple diapering. The material is Doulton stone (which is employed throughout the cathedral, including the screens and monuments), except the panels containing the inscriptions, which are of yellow Mansfield stone. In the tympana of the arches are shields containing various emblems.

#### LIVERPOOL.

*The Walker Art Gallery.*—At a meeting of the Library, Museum, and Arts Committee of the Liverpool Corporation, on the 9th inst., the City Surveyor, Mr. Sheldermine, submitted plans for the enlargement of the Walker Art Gallery, at a cost of from 10,500l. to 11,000l. A resolution was adopted to the effect that it be recommended to the City Council that the plans be adopted. The intention is to provide commodious exhibition-rooms, without interfering with the arrangement of the permanent art collection. It may be added that an exhibition of the original drawings and engravings by Messrs. Charles Green and W. D. Barker, at the Walker Art Gallery, was opened to the public on Saturday last. There are in all about 250 works. The exhibition will remain open a fortnight longer.

*The Mersey Tunnel.*—There appears to be every prospect (according to the *Daily Post*) that the proposed railway tunnel between Liverpool and Birkenhead will before long be brought to a successful termination. No greater obstacles than were anticipated and provided for by the promoters and engineers of the company engaged in the undertaking have been met with, either in the sinking of the shafts at the Liverpool and Birkenhead ends, or in the process of cutting the trial borings. At the Birkenhead shaft a powerful engine and pumps have been erected; and a shaft is sunk 17 ft. 6 in. in diameter, 170 ft. deep, and which is about 138 ft. below the old dock sill. From the shaft heading, which is 8 ft wide and 7 ft. high, a boring has been carried for about 170 yards to within 100 yards of the river wall. A pair of 30-in. lifts have recently been put down. They have an 8-ft. stroke, and are capable of raising 6,000,000 gallons of water per day. The engine was made by the firm of Hathorn, Davey, & Co., of Leeds. The water at present entering the shaft is about 1,600,000 gallons per twenty-four hours. The rock cut through for the shaft and boring is exceedingly solid and compact. There is scarcely any fissure, and for some yards in many places it is almost dry. Judging from the rock already cut through, there are no difficulties in the way of the further progress of the work than those of ordinary rock excavation and pumping, for which ample provision has been made. The present boring is driven at the rising gradient from the shafts 1 in 500, so that the water permeating through the rock gravitates to the shafts, where it can be easily pumped up by the powerful engines at each end. It is expected by Mr. Irvine, the resident engineer, that progress will be made from each shaft at the rate of twelve yards per week, and, allowing for all

necessary stoppages, it is estimated that the trial heading will be completed in about a year. The tunnel, which it is proposed to construct simultaneously with the trial boring, will be wide enough for a double line, and will, it is hoped, be completed in about three years from its commencement. On the Liverpool side a shaft similar to that at Birkenhead has been sunk. The distance from the Liverpool shaft to the Birkenhead shaft is as nearly as possible one mile, and, taking into consideration the length of the present borings, there are left some 1,300 yards yet to be cut through, which, at the estimated rate of progress of 24 yards per week from the two ends, should be accomplished in very little over a year, as stated. Although the trial borings have an upward gradient of 1 in 500 from each shaft, the tunnel, which will be on a higher level, will descend towards the centre, and any water which may find its way into it will drain towards the centre, whence it will be carried into the trial boring, and thus to shafts at each end, to be pumped up by the engines.

*Mission-Room, Everton Valley.*—A new school and mission room, built for the parish of St. Chad by the Liverpool Education Board in connexion with the Church of England, has been opened. The building is of galvanised and corrugated iron and lined with pitch pine, stained and varnished. It is about 100 ft. long, and 40 ft. wide. As a school it will accommodate 500 children, and as a mission-room it will seat 850 people. The building was erected under the supervision of Mr. Joshua Siddoley, the acting member of the committee, by Messrs. H. G. Brown & Co., of Smithdown-lane, at a cost of about 1,000l.

#### CRACKING AND CRUSHING CONCRETE.

A CORRESPONDENT writes to say he thinks there must be some mistake in the table we gave (p. 649, ante) of the cracking and crushing loads of Mr. Lascelles's concrete blocks, because the figures for the cracking are identical with those for the crushing loads.

There is, however, no mistake, and Mr. Kirkaldy explains by saying that, unlike most materials, there was no perceptible space of time between the cracking and crushing; in fact, when it had stood all the pressure it was capable of, it gave way at once in every instance."

#### PATENT RECORD.\*

ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending June 4, 1881.

4,124. T. H. Mitchell, Strawberry Hill. Ventilating sewers, &c.

Pipes, with inverted funnel-shaped junctions to the sewers, are led to the chimneys of houses or the abutts of boiler furnaces, and thereby the noxious gases are drawn out of the sewers. Oct. 11, 1880. Price 11s.

4,332. P. Bawden, Notting Hill. Manufacture of bricks and tiles.

The pug-mill has a vertical shaft, with knives passing through it, by which the clay is cut and ground and pressed downwards through the hole in the bottom of the mill into the moulds which pass underneath. The pug-mill shaft passes through the bottom of the pug-mill and actuates by suitable gearing an endless band or chain of moulds, which in section are like an H. They are joined together at the lower part, the upper part being the mould for the brick. These moulds have palette-boards in them, which rest on rails which are above the gearing wheels. A wire-cutting frame is also fitted to cut the bricks off at the ends of the moulds. As the moulds turn over the wheels, the palette-boards with the bricks on them are lifted out by the rails, and the bricks are delivered on a page. The empty moulds are then washed by revolving brushes, and passed through dry sand. The palette-boards are supplied to the moulds by a belt passing round pulleys. Oct. 23, 1880. Price 8d.

4,333. P. Montague, Paris. Kilns.

These have a continuous fire, and are of a curved form in the interior. The fire is at the upper part, and the bricks are sent out by a movable endless apron. The grate is formed of small iron bars for supporting the bricks, and by means of a screw a truck is raised, the open top of which passes between the bars and raises the charge. The bars can then be withdrawn, and the truck is lowered, carrying the charge. The bars are then replaced and the truck withdrawn. Bricks can be added at the top as the charge is lowered. Oct. 23, 1880. Price 6d.

4,366. J. Amson, Birmingham. Draught preventers, &c.

A metal frame is led into the top, bottom, or sides of the door, window-sash, &c., which is open at the outer face, so as to allow of the passage of the latch contained therein. A rod, with slots working over fixed pivots, is placed at the back of the frame, the end of which projects beyond the end of the metal frame, so as to come in contact with the frame of the door or window in the act of closing, and be driven forward. Cranked levers are

attached to the rod, bearing upon springs between the bar and the latch, which force out the latch, and thereby prevent any draught. (Proc. Fro.) Oct. 26, 1880. Price 2d.

4,375. P. Balmer, Scarisbrick. Continuous kilns for burning bricks, &c.

The chimney is placed outside the kiln, and the flue brought underground into it. Each of the chambers, which are in two rows, back to back, has openings dipping down to the flue, and there are openings in every partition dividing two chambers. All these openings are fitted with dampers worked from the outside. In one of the buttresses at the end is placed the furnace, opening into the first chamber. By this method some of the chambers may be firing, at the same time that others are cooling, or emptying, or refilling. (Proc. Fro.) Oct. 27, 1880. Price 5d.

4,381. W. Forsyth, Worcester. Composition or cement.

This cement is made of the following ingredients:—Powdered litharge, 11 oz.; vegetable black, or whatever colour is required, ½ oz.; pure glycerine, 4 oz. The mixture is brought to a thick paste, and is ready for use. Oct. 27, 1880. Price 2d.

4,441. F. King & G. Green, Gloucester. Alarm and indicating apparatus for boilers, cisterns, &c.

A float is attached to a counterbalanced lever, to which is fixed a cranked iron, in which is an insulated spring. When this is lowered by the rising of the float, it connects to a wire, and rings an electric bell. (Proc. Fro.) Oct. 30, 1880. Price 2d.

#### THE ALEXANDRA PARK ESTATE.

LAST week a portion of the Alexandra Park building estate was offered for sale within the Palace grounds by Mr. Richard J. Collier. The property consisted of seventy-seven lots of freehold building land, having frontages to the Park-road and Colney Hatch-lane. The average dimensions of the several plots offered were 26 ft. frontage by a depth of 190 ft., one plot having a frontage of 88 ft. and a depth of 100 ft. Several of the plots were sold, those having 26 ft. frontage and 190 ft. in depth, realising an average of 130l. each; whilst the plot having a frontage of 88 ft. and a depth of 100 ft., fetched 156l.

#### SALE OF BUILDING LAND AT KILBURN.

LAST week Messrs. Fox & Bousfield offered for sale at the Auction Mart, a freehold building estate, twelve acres in extent, and situated in a very commanding position, on the summit of Shoot-up Hill, in the parish of Hampstead. The property was submitted to competition by order of the directors of the Grand Junction Waterworks Company, whose years ago purchased it with the intention of constructing high-level reservoirs upon it, its lofty altitude rendering the site specially suitable for such a purpose. After a close competition the property was sold for 14,800l., being at the rate of a little more than 1,200l. an acre.

#### SALE OF FREEHOLDS IN WOOD-STREET.

WOOD-STREET, in the City, is well known as one of the main centres of City business, and the great value of freehold property in this locality is indicated by a sale which took place at the Auction Mart last week, conducted by Messrs. Norton, Trist, & Watney, and which, in the aggregate, realised a sum approaching 40,000l. From 10l. to 11l. per foot was the average amount which the various properties commanded, as will be seen by the figures which follow. Nos. 95 and 96, which occupy an area of 1,200 ft., and let on lease for a term of thirty years, from 1879, at 600l. per annum, were sold for 13,500l. [Two adjoining properties were next sold, one of which, occupying an area of 540 ft., realised 5,200l.; and the adjacent property, also occupying an area of 540 ft., was sold for 5,100l.; the entire property realising 23,800l. Premises in Bull's Head-passage, Wood-street, were also included in the sale, amongst which were those covering an area of 3,500 ft., which were sold for 6,700l.; and the Bull's Head public-house, having a frontage to Wood-street of 12 ft., and containing an area of 500 ft., was sold for 5,200l. The entire proceeds of the sale amounted to 35,700l.

All the properties bracketed above are let on low rentals for terms expiring in a year or two, when, the auctioneers informed us, the present rentals may be expected to be largely increased, and that the low rentals now paid are no indication of value, but that the lease of Nos. 95 and 96, for thirty years, at 600l., may be regarded as a guide to the future rentals of the other property.

\* Compiled by Hart & Co., patent agents, 28, New Bridge-street, E.C.

## SURVEYORSHIP ITEMS.

**Ventnor.**—At the meeting of the Ventnor Local Board, held last week, the Board unanimously resolved to increase the salary of their surveyor, Mr. R. S. Scott, from 105*l.* to 150*l.* Several members testified to the efficient manner in which Mr. Scott had discharged his duties.

**Worcester.**—At the last meeting of the Worcester Town Council, the question of giving the surveyor 200*l.* in addition to his salary of 400*l.*, wherewith to pay his assistants, gave rise to a long discussion, resulting that, by twenty-two votes to eight, the motion to pay 200*l.* a year was carried. The minority were in favour of giving 150*l.*

**Ledbury.**—At a meeting of the Ledbury Highway Board on the 7th inst., it was resolved to increase the salary of the surveyor (Mr. C. E. A. Lloyd) by 32*l.* 10*s.*, making it up to 216*l.* per annum.

## THE MINIMISATION OF SMOKE.

The Kyrle and National Health Societies are arranging an Exhibition of Improved Heating and Lighting Appliances, to be held at South Kensington, London, on the 24th of October, and to close on the 26th of November next. A great number of new patents have been taken out in response to the public demand for them, and there are evident indications of a change from the old and barbarous state of things which occasions so much waste and discomfort. The presidents of the Exhibition are H.R.H. Prince Leopold, Duke of Albany, K.G., and the Duke of Westminster, K.G., assisted by an influential executive committee. A large number of applications for space have been received in advance of the particulars of the Exhibition, and communications should be addressed at once to Mr. G. R. Redgrave, Works Office, South Kensington Museum, as no applications can be entertained after the 30th inst. Prizes in money and medals will be awarded.

## RIGHT OF BUILDINGS TO LATERAL SUPPORT.

THE COMMISSIONERS OF WORKS AND PUBLIC BUILDINGS V. ANGUS AND DALTON.

In this important case, which has been before the courts for several years,\* judgment was given by the Lord Chancellor in the House of Lords on Tuesday last in the appeal brought by the appellants, the defendants below, against an order of the Court of Appeal reversing a decision of the Queen's Bench Division, setting aside a verdict in favour of the respondents, the plaintiffs below. The case is one of considerable importance, inasmuch as it settles the vexed question of the right to the lateral support of the adjoining soil.

The judgment of the Court of Appeal was affirmed by their lordships (the Lord Chancellor, Lord Coleridge, Lord Blackburn, and Lord Watson, who were all agreed), and the appeal was dismissed, with costs.

We shall return to the subject.

## PROVINCIAL NEWS.

**Hereford.**—New Soda-water Works for Messrs. Davies & Co. have been opened. Some years ago Messrs. Davies acquired by purchase the old "Hereford Coaching Yard" situated in Catherine and Coningsby streets, upon the site of which their new premises have been erected. The buildings cover nearly half an acre of ground, and form three sides of a square. The warehouse and stables are on either side of the square, and the soda-water factory is built in the centre. The factory, including the office, measures 100 ft. in length, 20 ft. in width, and is lofty in proportion; and, in addition to the ordinary one, there is a supplemental roof of varnished wood, whose purpose is to prevent any impure matter falling into the waters. The machinery is by Messrs. Hayward Tyler & Co., of London. Mr. W. W. Robinson, of Hereford, is the architect of the buildings.

**Truro.**—It is proposed either to erect a new Corn Exchange for Truro, or to acquire premises recently erected and to convert them to that purpose. Mr. Silvanus Trevail, architect, has been consulted in the matter.

**Ripponden.**—Fifteen or sixteen months ago No. 1 Mill, belonging to the Commercial Company, was destroyed by fire. The services of

\* See *Builder*, vol. xxiv. (1876), p. 718; vol. xxxv. (1878), p. 313; vol. xxxvii. (1879), p. 27.

Mr. R. Horsfall, architect, of Halifax, were called into requisition, and a good, substantial, fireproof mill, of four stories high, has been erected in its place. The mill is now being filled with machinery by Messrs. Platt Brothers, of Oldham, and Messrs. Curtis, Sons, & Co., Manchester. The steam-engine and shafting have been entrusted to Messrs. Wood Brothers, of Sowerby Bridge.

**Brighton.**—The foundation-stone of a new Workmen's Club for the parish of St. Nicholas, Brighton, has been laid. The site is in Centurion-road. The club, which will be a red brick building, will have four floors, two of which, however, the kitchen and superintendent's apartments over,—will be below the street level, owing to the conformation of the ground, which rises very abruptly from back to front, from east to west; bringing the mission-room (or extra reading-room if required) on the ground-floor, with the club-room over. These are each 25 ft. long by 14 ft. wide. Messrs. Lynn & Sons have taken the contract at the sum of 790*l.*

**Doncaster.**—On the 1st inst., a new Court-house, which has been erected behind the Guildhall, was opened by the Mayor. This new justices' room was rendered necessary in consequence of the old room being required for extra cell accommodation. The old room was anything but suitable for the purposes required, being low, dark, and insufficiently ventilated. The present room has been built from plans of Messrs. Parry & Walker, by Messrs. Harold Arnold & Sons, of Doncaster. It adjoins the Guildhall, and communicates with the new cells by an underground passage.

**St. Neots.**—Extensive alterations have been made in connexion with the magistrates' room at St. Neots Police-station. The work has been carried out by Mr. Wm. Osborne, builder, the architect being Mr. R. Hutchinson.

## MILDEW.

SIR,—I am repairing a house, some of the walls in which are covered with mildew,—on the paper,—due, I think, to bad ventilation.

Salguette's bricks suggested as being the cause, but the growth has no taste, but a smell of decaying fungi. The paper is being stripped off. Would you kindly tell what composition, if any, to apply to the walls to destroy growth of the mildew in the future, or whether sheet lead under the paper is advisable? Having just read your article on "Damp," I thought perhaps some correspondent would give me a hint. A READER.

## THE PLUMBING LECTURES AT THE SOCIETY OF ARTS.

SIR,—I was present at the lecture given by Mr. Hellyer on Tuesday night, and agreed with almost all that gentleman advanced. There were those in the room, however, who held different views, and some gentlemen wished to know if a discussion would be allowed. Now, I think the chairman ruled wisely in refusing to allow a discussion at that time, but I would suggest that it would greatly increase the interest taken in these lectures, also the ultimate stock of information gained from them, if it was known that at the end of the course an evening would be set apart especially for discussion, limiting each speaker to ten minutes,—the speakers to be working plumbers.

In my opinion, by this means we should get at the views of the working men very much better than by letters in the papers, as suggested by the chairman.

DANIEL EMTAGE.

## ARCHITECTS AND QUANTITIES.

SIR,—Your correspondent, "Quantity Man," in your issue of the 4th inst. (p. 718), closes his letter on the above subject with these words,—"When I hear an architect gravely argue that he ought to act as surveyor, I wonder much whether he carries the principle further and wishes surveyors to turn architects? One idea is as good as another!"

Three or four years ago I superintended the erection of a famous public-house, costing about 8,000*l.*, at the same time planning and obtaining the necessary consents from the authorities for building on the other part of the estate. The building mentioned was finished, and I continued to be friendly with my client. Soon after the other buildings were being erected, but not under my superintendence, but, *mirabile dictu!* under that of the quantity surveyor's measuring clerk! I had to console myself that I had not sacrificed a principle for the sake of gain, as my supplanter had no compunction in doing,—after making my client's acquaintance during the measurement of the building by making frequent friendly visits to the new public-house in question. "But" it may be remarked by some of your readers, "it is excusable in a quantity surveyor's pushing clerk. A master would not do such a thing."

Again, I had occasion to call on a quantity surveyor with whom I had been associated in business. My eyes happened to alight upon the title of a set of drawings from which the quantities were being taken off. "Messrs. I observed, 'not of —, surely?'" "Oh! yes; your friends." "How do you know they are my friends?" I rejoined. "I have heard them speak of you, and I come up with Mr. — every morning." "Indeed? Are you the architect, then?" "Yes." I leave your readers to imagine why I made no further observation, and turned the story over to my friend. "I wish to be remembered a quantity surveyor's clerk, not an honourable master. 'We all are honourable men.' What a snugly-packed nutshell! Five per cent. commission, 2 (2) per cent. for quantities, and 2½ (2½) for the measuring up. Of course,

the owner knew nothing about the two latter. What could have fitted better? To say nothing of the opportunity of adjusting, any little error! "Look on this picture, then on that."

I also, wonder if "Quantity Man" ever acted as architect, and what he would do were he in such a dilemma as to have the opportunity proffered him.

I enclose my card,

H. H. B.

## CHURCH-BUILDING NEWS.

**Sheepwash.**—The Church of St. Lawrence, in the little village of Sheepwash, twelve or fourteen miles from Torrington, Devon, was reopened a few days ago, after restoration under the direction of the late Mr. J. F. Gould, architect, Barnstaple, who had practically finished the work just before his decease. Of the original church nothing remains of any archaeological interest. The general fabric was found to be in a very dilapidated condition. It was hoped that the lower stage of the tower might have been preserved, but in the course of the work this was found to be impracticable. In designing the new building the general lines of the old walls were adhered to, except that the chancel is extended about 3 ft. to the eastward, and a transept has been added to the north side of the chancel. The tower at the west end on the site of the original is now carried up two stages, slightly above the level of the ridge of the nave. The design for this shows another stage, with compact belfry windows, and a saddle-back roof with coped east and west gables, side gables, with single-light louvred windows and wrought-iron finial, which, when completed, will be a very pleasing example of a quaint style of tower, of which few, if any, examples exist in the county. The new building has been designed in the spirit of the style prevailing about the latter part of the thirteenth century. The church consists of nave (about 33 ft. by 22 ft.), with western tower and south entrance 7 ft. square, transept 22 ft. by 16 ft., with adjacent north transept, now used as a vestry. The walls throughout are built of local stone, strengthened with massive buttresses, the slopes of which, together with the quoins, copings, label mouldings, weatherings, window, and other dressings are of Hatherleigh stone, the interior being plastered, leaving the stone dressings to arches, doors, and windows exposed. The nave is divided into four bays by the roof principals, which rest on stone corbels, and the space between the rafters is plastered, and the chancel roof has three bays, divided by bold principals, with ends left for carving, rising on oak wall-plate and corbels, with backs of rafters boarded. The body of the church is divided from the chancel by a moulded arch springing from two shafts with caps and bases. The aisle and chancel floors are paved with tiles from the works of Messrs. Maw & Co., those of the chancel being of a very handsome design, with steps of Devon marble. The chancel fittings are of oak, the choir-seats and reading-desk having traceried fronts. The pulpit, lectern, altar-table, and other fittings, are all oak, the framing being of Memel wainscot, and the panels of old oak from the original building. The altar-rail is also of oak, with wrought-iron standards. The seating of the nave has solid bench-ends, with moulded capping on top. The church is heated by one of Porritt's stoves, the pilot stove of which also heats the vestry. The original contract was taken by a builder who unfortunately was unable to carry it out, and the completion of the work was then entrusted to the clerk of the works, Mr. Charles Ostway, of Barnstaple, who also superintended the renovation of Petrookstone Church, which was another of Mr. Gould's restorations. The east window was presented by Mr. R. Southcombe, of Stoke. The whole of the seating of the nave is in pitch pine. The glazing of the windows was done by Mr. Pepper, of London; the wrought-iron massive door-hinges were made by Messrs. J. D. Young, of Barnstaple; and the plumbers' work was done by Mr. Eastmond, of Torrington.

**Putney.**—The foundation-stone of what is intended to be the permanent structure of Emmanuel Church (Free Church of England), Putney, has been laid. The new church will accommodate 350 people, but provision will be made for the erection of a gallery if at any future time it should be found necessary to increase the number of sittings. There are also schoolrooms in the basement for 150 children. The amount of the first contract is 2,183*l.* The church, which is in the Gothic style of architecture, has been designed by Mr. W. G. Loe, the contractor being Mr. W. R. Williams, of Putney.

## SCHOOL-BOARD SCHOOLS.

**Leicester.**—The new industrial schools near Darnford, erected by the School Board for Leicester, were formally opened the other day by Mr. Mundella, Vice-President of the Committee of Council on Education. The buildings are situated on an elevated position, commanding a fine agricultural view on all sides, and surrounded by sixty acres of land. The design, which is of the Queen Anne type, is executed principally in red bricks, the upper parts being of rough-cast plaster, while the roofs are covered with dark red tiles. The ground on which the building stands is about 200 ft. square, inclosing a working and play yard about 120 ft. square, and laid with asphalt by the Val de Travers Company. The building comprises some 170 rooms, including the superintendent's and teachers' rooms, the different kinds of trade workshops, board-room, schoolroom and chapel combined, and four dormitories containing beds for from 150 to 200 children, with baths, store-rooms, &c. The agricultural buildings are attached, but outside the inclosed yard. The water-tower contains four galvanised iron tanks supplied with spring water from a well 100 ft. deep, and with the soft or rain water from a tank beneath the ground containing 30,000 gallons, into which all the water from the roofs, passing through filters, is conveyed. From these iron tanks a hard and soft water service is laid through all the buildings. The buildings are heated by steam passing from the boiler through 2-in. pipes. The laundry and other machinery is worked by a small engine. The cooking is to be done by gas and steam. Earth-closets are used, but the general sewage is conveyed from the buildings through 12-in. drain-pipes to a cess or soil tank situated about 400 yards from the buildings, and is to be utilised on the land. The general contractors for the works were Messrs. T. & H. Herbert, of Leicester. The heating, cooking, steam supply apparatus, &c., was executed by Mr. Ashwell, engineer and contractor, Leicester. The new gasworks are by Mr. Bower, of St. Neots, Hunts. The architect is Mr. Edward Burgess, of London and Leicester, whose clerk of works was Mr. Dale. The cost of the buildings has been 20,000l.

**Great Yarmouth.**—The new Board schools at the North End have been opened. They have been erected on a plot of ground having frontages to Ramp-row and to a new road extending from Ramp-row to Garrison-walk. The site is about 195 ft. by 150 ft. The main buildings form a group of which the infants' department is the centre, the boys' and girls' departments forming wings on either side. The principal front is to the south, the buildings being set back from Ramp-row so as to leave open spaces for playgrounds in front, these having covered playsheds; the offices, with lavatories, &c., are arranged at the back of the schools. The schools are of Gothic character, and are built of red brick, with dark mortar joints. The moulded and ornamental brickwork has all been specially designed by the architects, and has been supplied by Mr. G. Gunton, of Costessey. The drainage has been specially attended to, and the soil-pipes, &c., are disconnected and ventilated by a Banner's cowl. The schools are heated by Shorland's Manchester grates; fresh cold air is admitted into the rooms by means of Sherringham's ventilators in the walls, made to open and close at pleasure; the heated and impure air is extracted by means of Howarth's revolving ventilators in roofs, and the openings from the same to the rooms are capable of being regulated as required. Accommodation is provided according to Government requirements for 610 children in the three groups, with three rows of desks. The cost is as follows:—Contract amount, 3,876l.; fittings and furniture (about), 150l.; architect's commission, 210l.; total, 4,236l.; cost of site and legal expenses, &c., 1,424l.; total, 5,660l.; cost of schools per child, exclusive of site, 6l. 18s. 10½d.; cost of schools per child, including site, &c., 9l. 5s. 6½d. The contractors are Messrs. Beech & Cork for bricklayer's and plasterer's work, &c., and Mr. B. Springall for carpenter's, joiner's, and ironmonger's works; the sub-contractors being Mr. Stanley, mason; Messrs. Dawber & Son, slaters; Mr. Nudd, road maker, &c.; Mr. Goffin, plumber, &c.; Mr. Rainer, gasfitter. The architects are Messrs. Bottle & Olley. The buildings have been completed, we are told, by the stipulated time, and there have been no extras of any description.

## VARIORUM.

**The Art-Journal** for June illustrates the works of Messrs. Henry and Albert Moore, and includes a paper on "Art applied to Town Schools," by Mr. E. R. R. bson, and one of a series on our "Household Furniture: its past History and its present Development," by Mr. G. T. Robinson. This particular paper treats pleasantly and usefully of dining-room tables. Both papers are illustrated.—"Picturesque America" (Cassell & Co.) will make the great country of which it treats better known amongst us than it is at present. Part III., now issued, illustrates most effectively "Look-out Mountain and the Tennessee" at Chattanooga. The descriptive matter is well written.—"Ward & Lock's "Universal Instructor" furnishes a large amount of knowledge for a small price. The thirty-six parts, when completed, will form a library of themselves.—"The June number of *Decorations* (Sampson Low & Co.) includes ten designs for dining-room chimney-pieces, the result of a competition instituted by the proprietors of the journal. Some of these are very good.—"The new issue of "Dickens's Dictionary of London, 1881," shows that continued care is given to its revision and improvement.—"Waterworks Statistics, 1881," edited by Chas. W. Hastings (John Smith & Co., Long-acre), although a small affair, gives some valuable information from actual returns from towns named.—"A very cheap yet very nice edition of "The Life of George Stephenson," by Samuel Smiles, LL.D., has been published by Mr. Murray as a fitting and necessary outcome of the centenary. It is an admirable book, as we have taken occasion to say more than once, and the present issue, with a forcible preface by Mr. Smiles, twenty-four years after the publication of the first edition, will doubtless be sold in thousands.—"English Etchings (Reeves, 155, Fleet-street), is the title of a monthly publication of original etchings by English artists just now commenced, the main object of which is to increase the popular appreciation of the art. The first part gives four very pleasing works for 3s. 6d.—"A Treatise on Mechanical Engineering," by Francis Campin, C.E., which forms No. 223 of "Weale's Rudimentary Series" (Crosby Lockwood & Co.), is for the main part an abridgement of the author's larger treatise on the subject, published some years ago; but it has been improved by omissions and additions.—"The Earl of Beaconsfield: a Biographical Memoir," by Edward Walford, M.A. (F. Warne & Co.), gives, for a few pence, a great deal of interesting matter concerning the deceased statesman and novelist, pleasantly and discreetly communicated.—"The Gas and Water Companies Directory, 1881," edited by Chas. W. Hastings (22, Buckingham-street, Strand), would seem to be indispensable to all who interest themselves in those subjects. The list of Continental gas companies might still be improved.

## Miscellanea.

**Roman Altar at Colchester.**—Concerning the recently-found Roman altar here, Mr. Chas. Golding writes,—The inscription is,—

MATRIBVS  
SVLEVIS  
SIMILIS. ATCL. F.  
CI. CANT.  
V. L. S.

and may, I think, be read thus:—Similis was a son of Attius, and he, in discharge of a vow, dedicated an altar to Sulevi. Ci. and Cant. are indicative that he was a citizen of probably Cantii, now our kingdom of Kent; although Cant. would bear the reading of Cante, which was the kingdom of the north-east of Britain. Sulevi occurs on an inscription found at Bath. V. L. S. may be *Votive Legatio Senatus*, i.e., the Embassy taken to perform the vows of the Legion of the Senate; but we know that V. stood for *Quantum*, therefore, I prefer to read it as the Fifth Legion of the Senate.

**Value of City Property.**—A plot of land, formerly the site of Allhallows' Church, at the corner of Bread-street and Watling-street, having an area of 3,270 ft. super., and let at 1,800l. per annum, together with the reversion to the buildings thereon in seventy-eight years hence, has just been sold by Messrs. Jones, Lang, & Co., 3, King-street, Cheapside, for 43,200l., or over 13l. per foot super.; or about half a million per acre.

**Sanitary Assurance Association.**—The first general meeting of the members and the honorary council of the Sanitary Assurance Association since its incorporation in February last was held on the 10th inst., at the offices of the Association, 5, Argyl-place, W. In the unavoidable absence of Sir Joseph Payer K.C.S.I., F.R.S., the president, Professor Hayter Lewis, F.S.A., vice-president, occupied the chair, and was supported by Sir Richard Temple, bart., Captain Douglas Galton, C.B., F.R.S., Mr. Romanes, F.R.S., Mr. George Aitchison, A.R.A., Professor Corfield, M.D., Mr. John Whichcord, F.R.I.B.A., Mr. Mark Judge, and Mr. H. Rutherford. Professor Corfield (chief sanitary officer) and Mr. Judge (surveyor) related the progress of the Association, and reported on the work of sanitary inspection that had been done. The property which had been placed on the assurance register varied in value from houses rated at 60l. a year, in which the total fee to subscribers for report, supervision of work, and certificate is 2l. 2s., to houses rated as high as 700l. a year, with proportionately increased fees. The Association undertake the inspection of the smallest class of property, and no fee is charged to subscribers for a single house rated at 20l., while the fee is only half a guinea for houses rented at 40l. In the discussion which followed, Sir Richard Temple, Capt. Douglas Galton, and Mr. Whichcord spoke strongly in support of the objects of the Association, and the Council were requested to take steps to make the Association as widely known as possible, and particularly to call the attention of the proprietors of large building estates to the advantages which would accrue if the certificate of the Association were made essential to the granting of leases. Professor Hayter Lewis, in acknowledging a vote of thanks for presiding, said he hoped the Council would have still greater progress to report when the time for the annual meeting came round; he trusted that speculating builders would soon recognise the value of the certificate of the Association, for there could be no doubt that houses certified as in a satisfactory sanitary condition by the Association would be of greater value in consequence.

**The Roman Villa, near Brading.**—The second edition of the "Guide to the Roman Villa, recently discovered at Morton, between Sandown and Brading, Isle of Wight," which has been drawn up by the excavators of the buildings, Messrs. John E. Price, F.S.A., and F. G. Hilton Price, F.G.S., contains an account of nineteen chambers which had been laid bare up to the time of its issue. During the last few weeks these gentlemen have uncovered a dozen more chambers, making thirty-one in all. Of the twelve just brought to light, two are of large size, one of them measuring 54 ft. by 22 ft. It had pillars on two sides to support the roof placed against the walls, as the discoverers found large blocks of stone and concrete which formed the foundations. There were smaller chambers flanking on either side this very large one. Continuing due east, and joining the last named, is another room nearly 40 ft. long by 32 ft. broad, and on the south and east sides it is more solid blocks of concrete at equal intervals. On the north side, at a distance of 8 ft. from the north wall, are three of these blocks, corresponding with those on the north side. Adjoining the wall of the last-mentioned chamber is a well-house, with two semicircular apses. The well itself has been sunk to a depth of 80 ft., and water has been found; still, the bottom has not been reached as yet. A considerable number of coins found range in date from Domitian (A.D. 81-96) to Valentinian (A.D. 338-392).

**Drinking Fountain.**—On the 10th inst. a new drinking-fountain and a cattle-trough of polished granite were formally opened on the Chelsea Embankment, near the old church. Mr. John Lee, secretary of the Metropolitan Drinking Fountain and Cattle Trough Association, said the structure was the gift of a lady, who has defrayed its entire cost, in memory of her late husband, Mr. George Sparks, formerly judge at Madras in the East India Company's Civil Service. The fountain had been erected by the Association from designs prepared by Mr. Charles Barry. Its entire cost, including a system of drainage and pipe-work, was 600l., and the donor has intimated her intention to endow it with a sufficient sum to insure its future maintenance and a water-supply in perpetuity, so that it should be no tax either on the funds of the Association or on the funds of the parish.

**Babylon and Egypt.**—At the last meeting of the Society of Biblical Archaeology, held at 9, Conduit-street, the president, Dr. S. Birch, in the chair, Mr. Theophilus G. Pinches, of the British Museum, read an account of Mr. Rassam's discoveries at Aboo-habba. This site, which is about sixteen miles south-west of Bagdad, the explorer identifies with the principal seat of the Babylonian sun-worship. The Chaldean historian Berossus names the city Sippara, and under the same name it occurs times without number in the cuneiform inscriptions. Berossus assigns to it an antediluvian origin. The antiquities unearthed here are mostly from the temple of the Sun-god, called E-Barra. These consist of an inscribed stone, 1 ft. high by 9 in. wide, the earthenware chest in which it was kept, a mould partly covering the stone, and a couple of cylinders bearing the name of King Nabonidus. At the top of the obverse of the tablet is represented the Sun-god sitting on his shrine. Above the shrine are two small figures, seemingly guiding with cords the course of the sun, which stands on a table below. Ministers of the god lead into his presence the royal worshipper, by whose order the tablet (which was exhibited at the meeting) was out. The inscription names several very ancient kings of Babylonia, and gives an account of the hieroglyphical inscriptions, all of a religious nature, found in the four pyramids, belonging to the fifth and sixth dynasties, the opening of which Pharaonic tomb was one of the last ones of the late Mariette Bey. The pyramid of King Unas (Dyn. V.) is the most ancient of the four. The other three, namely, those of Merira Papi, Merensa Haromsaf, and Neferkara Pepianab, all belong to the sixth Pharaonic house. The mythological texts engraved on the walls of these extremely ancient pyramids distinctly prove, Dr. Birch showed, the early currency of the Oairis myth in all its essential parts, as well as of the doctrine of the immortality of the soul.

**The Awards at the Melbourne Exhibition.**—The Melbourne correspondent of the Times writes:—"A little civil war has been going on between the Executive Committee of the Exhibition and the Fine Arts Committee. A jury of experts having been called in to revise the awards of the fine arts jury, its suggestions were referred to the Fine Arts Committee, which, in its turn, gave judgments of its own. The Executive Committee refuses to accept the report of the Fine Arts Committee, and demands that the latter shall simply decide as to which shall be taken,—the findings of the original jury or the findings of the revision jury. *Sub judice lis est*,—so irritating to artists,—in this delicate question. Another difficulty has arisen touching the Machinery division. This will interest many home and foreign manufacturers. Attempts have been made to override the verdicts of the Machinery jury, although they were confirmed by experts. Much ill-feeling has thus been generated among the parties concerned."

**Royal Horticultural Society.**—The case in the High Court of Justice, Chancery Division, before Mr. Justice Fry, "The Commissioners of the Exhibition of 1851 v. The Royal Horticultural Society, has been concluded. The plaintiffs claimed delivery of about twenty acres of ground at Kensington-gore, which was demised by them to the defendants on the 20th of July, 1860, and of an additional piece of ground subsequently conveyed. The plaintiffs were incorporated by Royal Charters of 1850 and 1851, by the latter of which they had power to dispose of the waste lands of the Exhibition of 1851. The defendants are a very old chartered incorporation, their deed being dated in 1749. His lordship held that the claim of the plaintiffs was not sustainable, and dismissed the action with costs.

**Prize Essays on National Thrift.**—Early in the year, the directors of the National Thrift Building Society, 33, New Bridge-street, offered several prizes for the best essays on this important subject, to be written by competitors of either sex, but under twenty years of age. The adjudicators have made their award, and the successful essays are about to be published in the columns of *Capital and Labour*.

**Wickhamreux, Kent.**—This church has recently had new seats put to the nave, of unvarnished pitch-pine, made by Messrs. Knight, of Gloucester, from the designs of Mr. Ralph Nevill, F.S.A., architect. New lamp-brackets of wrought iron, and other improvements, have also been carried out.

**Visit of the Architectural Association to Greenwich Hospital.**—On Saturday afternoon last about eighty members of the Architectural Association visited Greenwich Hospital, where they were received by Mr. Loughborough, clerk of the works, and by him conducted pretty well all over the building. Assembling in the Painted Hall, they passed to the chapel, and thence up and down several staircases; along almost interminable corridors; through examination-halls and rooms, laboratories, drawing-offices, and other apartments devoted to the work of the Royal Naval College; through club and billiard rooms used by the students of the college; and even into kitchens. The visitors ultimately found themselves in the Museum, and there they had an opportunity of seeing the "Nelson-relics" and other objects. The rapid pergrination of the buildings in the way we have described was not wholly devoid of interest to the visitors as members of the general public, but as students of architecture they had little or no opportunity of learning anything about the buildings, although this, we take it, is the main object of such visits.

**Wright's Patent Brush.**—A company has been formed, as our advertising columns show, to work the patent inventions of Mr. Edward Wright for improvements in the manufacture of all kinds of paint, distemper, and other brushes. The improvement consists, as we have already pointed out, first, in securing the bristles so firmly between two metal rings under great pressure that it is impossible for them to become loose or be pulled out; and, secondly, in a handle which has a socket into which the knot of bristles so made is placed and held there firmly as to give an amount of elasticity and length of wear far superior to the ordinary brushes now in use, at the same time affording the facility for removing the worn bristles and substituting new ones as often as required.

**Bursting of a Water Tank.**—On Tuesday a large water-tank upon the top of a tower at Chelmsford suddenly burst. The tank, which was constructed of cast-iron plates to hold 40,000 gallons, was being pumped full of water after having been caulked. When almost full it burst with a loud report, three sides of it falling to the ground. There were two lads in the tower at the time, but neither of them was hurt. The tower has just been erected by the Chelmsford Rural Sanitary authority, in connexion with the water-supply of Great Badlow and Springfield. Were there any tie-rods?

**Metropolitan Board of Works.**—At the meeting of the Fulham Board of Works last week, the election of a representative at the Metropolitan Board of Works took place. A unanimous vote of thanks was accorded to Mr. Lammin, who has been the representative for the last nineteen years, and who was proposed for re-election. Mr. Brown was also proposed. The voting was by ballot, and the numbers were:—Brown, 24; Lammin, 11; whereupon the chairman declared Mr. Brown elected.

**"Evans" and the Falstaff Club.**—With reference to a paragraph under this heading in our last, Mr. J. B. Amor writes to say that, although he has placed the property in the open market, the negotiations with the Falstaff Club are still going on, and will probably be brought to a successful issue.

**Cleland.**—A new presbytery is in course of erection at Cleland, near Motherwell, N.B. Messrs. Pugin, of Westminster, are the architects.

## TENDERS

For alterations to the Coach and Horses public-house, 83, Longlens, Borough, for Mr. G. R. Davies. Mr. George Judge, architect:—

H. Everett	£470 0 0
N. Shepherd	421 0 0
J. B. Axford	148 0 0
T. L. Green	377 0 0
J. Hoare & Son (accepted)	381 0 0
S. Kippis	283 0 0

For building mission church, London Fields, in connexion with St. Paul's, Haggerstone:—

Tully	£1,163 0 0
Boyes	1,149 0 0
Thomerson & Son	1,060 0 0

For additions to Board Schools, Croydon. Mr. Chas. Heman, architect. Quantities by Mr. Chas. Fitz Roy Doll:—

Hollidge & Stuart	£1,687 0 0
J. Smith & Sons	1,665 0 0
W. Marriage	1,650 0 0

For workshops and manager's house, Brunwick Park, East Barnet, Herts, for the London Stereoscopic and Photographic Company:—

J. H. Garrett (accepted)	£1,510 0 0
--------------------------	------------

For repairs, &c., to houses at Myddelton-place, Clerkenwell. Mr. W. P. Griffith, architect:—

Fricker	£298 0 0
Barton	198 0 0
Martin	168 0 0
Cornwall	163 0 0
Baylis	135 8 0

For alterations and additions to the Grave Maurice public house, St. Leonard's-road, Bromley. Messrs. Wilson, Soe, & Aldwinckle, architects. Quantities supplied:—

Cochwatts	£2,390 0 0
Moyle	2,310 0 0
Bangs	2,165 0 0
Cox	2,130 0 0
Greenwood	2,090 0 0
Hearle	2,093 0 0
Beale	2,049 0 0
Shurmer (accepted)	1,890 0 0

For repairs and restorations to the parish church of St. Mildred, Broad-street, Cheapside. Mr. T. Milbourn, architect:—

General Repairs, &c.	£1,284 0 0
Collis & Sons	1,068 0 0
Hall & Beidal	1,033 0 0
Macey & Sons	833 0 0
R. Conder (accepted)	768 0 0

For alterations and additions to the parish church of St. Mildred, Broad-street, Cheapside. Mr. T. Milbourn, architect:—

Wentner, Smith, & Co.	£123 0 0
Jones, Dray, & Co. (accepted)	113 0 0

For repairs and restorations to the parish church of St. Mildred, Broad-street, Cheapside. Mr. T. Milbourn, architect:—

Gardner & Son	£50 7 6
Vaughan & Brown	48 16 0
Long (accepted)	47 2 0

For repairs and restorations to the parish church of St. Mildred, Broad-street, Cheapside. Mr. T. Milbourn, architect:—

Forseith	£271 0 0
Wilkins & Sons (accepted)	55 8 0

For repairs and restorations to the parish church of St. Mildred, Broad-street, Cheapside. Mr. T. Milbourn, architect:—

Combes (accepted)	£280 8 0
Bartholomew & Co. (accepted)	£110 2 6

For the erection of nine shops at Silvertown, North Woolwich, for Mr. J. Binder. Mr. R. Peters, architect:—

Watson & Dennett, Dalwich	£3,561 0 0
J. Parrish, Stepney	3,530 0 0

For the erection of three cottages at Silvertown, North Woolwich, for Mr. J. Binder. Mr. R. Peters, architect:—

Watson & Dennett, Dalwich	£745 0 0
J. Parrish, Stepney	600 0 0

For the erection of drying-shed at Millstream-road, Dockhead, for Mr. D. McCarthy. Mr. B. Cross, architect:—

Ayton	£282 12 0
Bullers	230 0 0
Brookwell & Son	219 10 0
B. Wells (accepted)	239 0 0

For rebuilding premises, Nos. 168 and 170, Camberwell-road. Messrs. Isaacs & Florence, architects. Quantities supplied by Mr. L. O. Riddett:—

Conder	£2,295 0 0
Patman & Fotheringham	2,148 0 0
Simpson & Co.	2,126 0 0
Beyron	1,971 0 0
Fyerman (accepted)	1,935 0 0

For business premises at Fulham, for Mr. Osborn. Mr. Banister Fletcher, architect:—

Maxwell Bros.	£1,037 0 0
Alfred G. Alard	1,707 6 0
Burman	1,670 0 0
Tyerman	1,670 0 0
W. H. Castle	1,341 0 0

For the erection of a house and offices at Hanger-lane, Ealing. Mr. John G. Gibbins, architect:—

House	Conservatory, Less if
Office	Porch, Bath stone
Office	Terrace &c. is used.

For building warehouse at Bangor Wharf, Belvedere-road, Lambeth, for Mr. Alfred Brady. Mr. Edward Harlock, architect:—

Stone & Humphrys	£475 0 0
J. Beale	410 0 0
Jennings & Son	435 0 0
Ansell	401 0 0
Tyerman	370 0 0
Newstead (accepted)	367 0 0

For repainting and redecorating Congregational Church Southgate-road. Mr. R. J. Lovell, surveyor:—

Devereux	£236 0 0
Mason	206 0 0
Smith	261 10 0
Fleming	236 10 0
Stations & Son	194 0 0
Groom	184 0 0
Roberts	125 0 0

For the erection of offices, St. Swithin's-lane, for Mr. G. T. Powell. Mr. William Wimpole, architect:—

Collis & Sons	£22,850 0 0
King & Co.	22,550 0 0
Laurence	22,474 0 0
Brass	22,185 0 0
Scribner	21,380 0 0
Ashby & Horner	21,550 0 0
Mortier	20,340 0 0

For brick culvert for the Acton Local Board:—

Smith	£1,178 0 0
Gibby	1,125 0 0
Nowell & Robson	976 0 0
Neaves	899 0 0
Bell	865 0 0
Hollings	860 0 0
Pizzey	842 0 0
Rowles	798 0 0
Foard	795 0 0

For new brewery and machinery plant, &c., at Seven-  
oaks, for Mr. J. S. Bligh. Mr. William Bradford, archi-  
tect:—

G. Pannett & Sons Building.....	£2,774 0 0
R. Durnell .....	2,650 0 0
William & Oakley.....	2,650 0 0
Wallis & Clements.....	2,494 0 0
James Wood & Sons.....	2,388 0 0
E. Vaughan.....	2,379 0 0
J. G. Naylor & Son.....	2,353 0 0
T. Galland & Son (accepted).....	2,360 0 0

Millwright and Engineer's Work.	
Shears & Sons.....	775 0 0
H. Pontifex & Sons.....	712 0 0
Bennett & Sons.....	710 0 0
Reed & Son.....	615 0 0
Ramsden & Son.....	616 0 0
Worsam & Son (accepted).....	610 0 0

Coppermith's and Pipe Work.	
C. Pontifex & Sons.....	694 0 0
Reed & Son.....	681 0 0
Ramsden & Son.....	685 15 0
H. Pontifex & Sons.....	637 0 0
Shears & Sons.....	536 0 0
Bennett & Sons.....	530 0 0
Worsam & Son (accepted).....	499 0 0

Backwork.	
Shears & Sons.....	152 0 0
C. Pontifex & Sons.....	111 0 0
H. Pontifex & Sons.....	105 0 0
Bennett & Sons.....	103 0 0
Ramsden & Son (accepted).....	88 14 0

For the erection of chapel, mortuary, custodian's lodge  
boundary wall, &c., at the cemetery, for the Corporation  
of Stratford-upon-Avon. Mr. Thomas T. Allen, architect.  
Quantities supplied by the architect:—

D. C. Jones & Co.....	£2,154 0 0
Millward.....	1,915 0 0
H. Attwood.....	1,835 0 0
Davis.....	1,741 0 0
G. Watson.....	1,715 0 0
E. T. Kennard.....	1,698 0 0
W. Lissaman.....	1,675 0 0
J. Kibler.....	1,654 0 0
J. Roberts & Sons.....	1,600 0 0
G. Whately.....	1,580 0 0
T. Wilkinson.....	1,583 0 0
W. Robbins.....	1,579 0 0
J. Compton.....	1,550 0 0
E. Tomes.....	1,530 0 0
W. Green & Son.....	1,523 7 0
J. Kibler.....	1,490 0 0
W. T. Bennett.....	1,449 0 0
H. & C. Burden (accepted).....	1,380 0 0

For pulling down and rebuilding the Dockhead Stores,  
Dockhead, for Mr. E. G. Chapman. Mr. George Treacher,  
architect:—

J. Beale (accepted).....	£1,947 0 0
--------------------------	------------

For erecting the Britannia public house, Tooley-street,  
for Messrs. Holt & Co. Mr. Chas. FitzRoy Doll, archi-  
tect. Quantities supplied by Mr. C. Henman:—

Williams & Son.....	£2,836 0 0
Crocker & Son.....	2,797 0 0
Nightingale.....	2,783 0 0
Smith & Son.....	2,689 0 0
Hess.....	2,667 0 0
J. Beale (accepted).....	2,609 0 0

For new shop-front and fittings at No. 5, Westbourne-  
grove, for the Don Association of Woollen Manu-  
facturers:—

Jeffreys.....	£280 12 0
Sage.....	85 0 0
Emery.....	83 0 0
Drew & Cadman.....	627 0 0

For about 3,000 feet run of 12 inch pipe-sewer, in the  
Archway and Holmeads roads, for the Horsey Local  
Board:—

J. Strachan & Co., Woodgreen.....	£1,140 6 11
J. Ford & Co., Westminster.....	1,055 0 0
Bairton & Crouch, Highbury.....	963 0 0
J. Taylor & Co., Fimbo.....	731 0 0
Dunmore, Horsey (accepted).....	699 0 0

For new brick culvert, and widening St. James's-lane,  
for the Horsey Local Board:—

Kemping, Camberwell.....	£777 0 0
Dunmore, Horsey.....	422 0 0
J. Taylor & Co., Fimbo (accepted).....	325 0 0

Accepted for the erection of a house and workshops,  
Mallock-bridge, for Mr. James Thompson. Mr. John  
Nuttall, architect:—

W. B. Anker, Mallock (masonry, &c.).	
W. Knowles, Mallock (carpenter, joiner, &c.).	

Accepted for the erection of a pair of semi-detached  
cottages, Darley Dale, for Mr. Thomas Holmes. Mr.  
John Nuttall, architect:—

John Wragg, Mallock (masonry, &c.).	
Thomas Bowler, Darley Dale (carpenter, joiner, &c.).	

Accepted for the erection of a house, Mallock Bank, for  
Mr. Joseph Crowder. Mr. John Nuttall, architect:—

James Wall, Mallock (masonry, &c.).	
Herbert Statham, Mallock (carpenter, joiner, &c.).	

For excavating and burning 2,850 yards of clay, at Henstridge, Somersetshire, for the Blackmoor Vale Dairy Company. Mr. Austin Cooke, architect:—	
Hutton, London.....	£273 0 0
Huntley, London.....	655 0 0
Agas Brothers, London.....	520 0 0
Taylor, London.....	450 0 0
Brooks, Stallbridge.....	470 0 0

For alterations and repairs to Mount House,  
Guildford. Messrs. Peak, Lunn, & Peak, architects:—

Additions and New Repairs.	
Mitchell Bros. Stratford.....	£775 0 0
Martin, Wells, & Co., Aldershot.....	650 0 0
R. Pink, Milford (accepted).....	635 0 0
M. P. Clarke, Guildford.....	631 0 0
Garnett & Mills, Guildford.....	527 0 0

For works in remaking and draining roadways for the  
Guildford Urban Sanitary Authority. Mr. H. Peak,  
surveyor:—

Cheeselden-road, Brodie-road, R. Pink, Milford.....	£245 3 0
W. Patrick, Guildford.....	240 19 0
Martin, Wells, & Co., Aldershot (accepted).....	170 0 0
	155 0 0

Residence, Broadlands-road.—Mr. Clark writes to say  
Mr. Richardson's tender was not accepted, but that of  
Mr. D. H. G. Brown, of Holloway, 2,100l.

#### TO CORRESPONDENTS.

"The of Mr. Clark's in Architecture" (letters on this subject) shall  
have attention next week.—R. D. (must adopt the usual course to  
make the matter known)—J. N. (should send list of names and  
amounts).—R. B. S. H. T. B. F. H. G. S. H. M. R. P. H. P. R. J. W. B. D. G. P. F. L. L. E. R. B. F. G. C. P. F. V. G. J. H. T. H. R. H. H. B. J. F. C. R. W. O. A. B. V. & C. M. J. R. S. & Son—J. T. F. A. E. A. C. D. E. & Son—J. B. P. L. & F. T. S. & Co.—C. C. R. S. R. F. (thanks)—S. D. (next week).

All statements of facts, lists of tenders, &c. must be accompanied by  
the name and address of the sender, not necessarily for publication.  
We are compelled to decline pointing out books and giving  
addresses.

Note.—The responsibility of signed articles, and papers read at  
public meetings, rests, of course, with the authors.

#### CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS,  
TRADE, AND GENERAL ADVERTISEMENTS.  
Six lines (about fifty words) or under..... 4s. 6d.  
Each additional line (about ten words)..... 6d.

Terms for series of Trade Advertisements, also for Special Adver-  
tisements on front page, Competitions, Contracts, Sales by Auction.  
No. may be obtained on application to the Publisher.

SITUATIONS WANTED.  
Four lines (about thirty words) or under..... 2s. 6d.  
Each additional line (about ten words)..... 6d.

REPLIES TO ADVERTISEMENTS.  
Addressed Box —, Office of "The Builder".

Cannot be forwarded, but must in all cases be called for, and the  
office receipt produced.

THE CHARGE FOR A BOX IS AS UNDER:—

For "Situations Wanted" Advertisements..... 3d. per Week.  
For all other Advertisements..... 6d. per Week.

\* Stamp must not be sent, but all small sums should be  
remitted by Cash in Registered Letter or by Money Order, payable  
at the Post-office, King's-lane, London, W.C.

DOUGLAS FOURDRINER, Publisher.  
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the office  
before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTI-  
MONIALS, &c. sent at the Office in reply to Advertisements, and  
strongly recommends that of the latter COPIES ONLY should be  
sent.

#### TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents  
in any part of the United Kingdom at the rate of 12s. per annum,  
postpaid. Remittances payable to DOUGLAS FOURDRINER,  
Publisher, 46, Catherine-street, W.C.

#### Best Bath Stone.

WESTWOOD GROUND,  
Box Ground, Combe Down,  
Corsham Down,  
And Farleigh Down.  
RANDELL, SAUNDERS, & CO., Limited,  
Corsham, Wilts. [ADVT.]

#### Box Ground Stone

Is the best for use in all exposed positions, being  
a well-known and tried weather stone.  
50,000 feet cube in stock.  
PICKTOR & SONS,  
Box, Wilts. [ADVT.]

Doubling Freestone and Ham Hill Stone  
of best quality, in blocks, or prepared ready for  
fixing. An inspection of the Doubling Quarries  
is respectfully solicited; and Architects and  
others are CAUTIONED against inferior stone.  
Prices, delivered to any part of the United  
Kingdom, given on application to CHARLES  
TRASK, Norton-sub-Hamdon, Ilminster, Som-  
erset.—Agent, Mr. E. WILLIAMS, 73,  
Charlotte-street, Portland-place, W. [ADVT.]

Doubling Stone and Ham Hill Stone,  
of best quality. Prices and Estimates, including  
delivery to any Station, on application to  
STAPLE & HANN, Quarrymen, Stoke-sub-  
Hamdon, Ilminster. Agent, E. CRICKMAY,  
No. 4, Agar-street, London, W.C. [ADVT.]

#### Asphalte.

Seyssel, Patent Metallic Lava, and  
White Asphaltes.  
M. STODART & CO.  
Office:  
No. 90, Cannon-street, E.C. [ADVT.]

Asphalte.—The Seyssel and Metallic Lava  
Asphalte Company (Mr. H. Glenn), Office, 38,  
Poultry, E.C.—The best and cheapest materials  
for damp courses, railway arches, warehouse floors,  
flat roofs, stables, cow-sheds and milk-rooms,  
granaries, tan-rooms, and terraces. [ADVT.]

#### Immense quantities of

DRY WAINSCOT,  
DRY MAHOGANY,  
DRY WALNUT,

in all thicknesses.

B. J. HUDSON & SONS,  
Whitfield-st., W., and Great Peter-st., S.W.,  
London. [ADVT.]

#### MICHELMORE & REAP,

Manufacturers of

CHARLES COLLINGS' PATENT

COLLINGS' PATENT HINGES,

LEVER, SCREW, & BARREL BOLTS,

Self-Acting "FALL DOWN" GATE STOPS,  
and IMPROVED GATE FITTINGS of every Description.

36A, BOROUGH ROAD,  
LONDON, S.E.

Discount to Builders.  
Illustrated List two stamps.

## ZINC ROOFING

FIXED COMPLETE.

## F. BRABY & CO.,

ESTABLISHED 1837,

THE MANUFACTURING AGENTS OF THE VIEILLE MONTAGNE CO.  
PATENT SOLID UNSOLDERED RIDGE PLATES, FOR ITALIAN OR SQUARE ROLL CAP ZINC ROOFING.

By the adoption of this Method the use of Solder is Entirely Dispensed with, and consequently the Danger incurred by the use  
of Fire-pots is Avoided. The Cost is Lessened and the Durability Increased. Estimates for Zinc Dormers, Flats, &c.

FITZROY WORKS, 356 TO 360, EUSTON ROAD, LONDON.

ALSO AT DEPTFORD, LIVERPOOL, GLASGOW, and CYPRUS.

Architects, Engineers, and Contractors Supplied with Drawings and Estimates Free of Charge.

# The Builder.

VOL. XL. NO. 2025.

SATURDAY, JUNE 25, 1881.

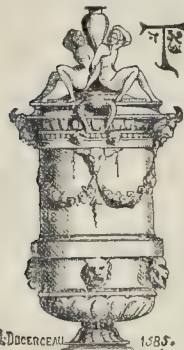
## ILLUSTRATIONS.

Cemetery Sculpture in Italy: Figure of Architecture from the Monument to the Cavaliere Sada, Architect, Turin.—Signor Giulio Monteverde, Sculptor	794
Hospital for the Sick Poor, Maribona (Double-page Engraving).—Messrs. H. Baxon Saell & Son, Architects	796
Details from "Churches of the Nene Valley," Northamptonshire	798
Cemetery Sculpture in Italy: The Noceti Monument, Genoa.—Signor Pietro Costa, Sculptor	803

## CONTENTS.

Churches near Stamford, and along the Nene	783	The Northamptonshire Architectural Society in Marchland	803	Theatre	809
The Right of Buildings to Support from Adjacent Land, &c.	785	Archæological Societies	805	Practical Farming	809
Nottingham University College	786	The Theatre at One's Own House	806	"Pure Air and Radiating Heat"	809
In Memoriam: Sir Joseph Mason, Knight, &c. June 15, 1881	787	Domestic Economy Congress	806	The Use of Coloured Marbles in English Architecture	809
Some Points of Comparison between the Fine Arts	787	The Revivelling of Lead-chalk Market, and Street Improvements	806	The English Land System	810
The Fane Museum of Decorative Art	788	Church of St. Paul, Forest Hill	807	Practical Papers	810
A Stranger in London	789	Prevention of Smokes: Society of Engineers	807	Misconceptions regarding the Theory of Colour	810
Lips Waste and its Valley	789	Foreign Serials	807	Verulam	810
The Glass Trade of the United States	789	Patent Record	807	London and Middlesex Archæological Society	810
The Little Improvement Scheme	789	Compulsory Education	807	Church Building News	810
Latest Mode of Restoration	790	Book Making at Brighton	808	Dissenting Church Building News	811
Cemetery Sculpture in Italy	791	Case under Building Act	808	Roman Catholic Church Building News	811
Hospital for the Sick Poor of the Parish of St. Marylebone	792	Compensating Cases	808	School Board Schools	811
Restoration at the Royal Exchange	792	Committee on Sales: Smith's Duties	809	Stained Glass	812
Leaving College, Essex	792	Appeal against Award: Cripps v. Road	809	Miscellaneous	812
Lincoln Diocesan Architectural Society	793				

### Churches near Stamford, and along the Nene.\*



THE book containing an account of the churches visited in the first excursion of the Architectural Association in 1870, under the guidance of Mr. Sharpe, was shown in a complete form to the 1871 excursion party, just as the second excursion was commencing at Ely, and was noticed, with appreciation of its value, in the *Builder* (vol. xxix., pp. 619 and 738). In it Mr. Sharpe aimed at giving a complete account of the architecture of Lincoln Cathedral, of three churches at Lincoln; of thirteen churches on the Cliff road, leading southwards from Lincoln towards Grantham; of fourteen churches at and to the south and east of Sleaford; and of eight churches at Spalding, and between Spalding and the Wash. Caythorpe, on the Cliff road, the remarkable double-naved church, with central tower and "sugar-loaved" spire, is only about eight miles from Sleaford; and although there is a gap of some ten miles between Billingborough and Spalding, it is a gap of wide fen not containing old villages. The book is thus an analysis of the church architecture at Lincoln, and between that cathedral city and the south-east of the county,—not along the direct route between the two points, but along such a route as a pedestrian, or a traveller by railway now-a-days, would do well to follow, as he would find much more to reward him in his journeyings than in traversing the shorter high-roads. Each building is taken to pieces and its architecture described, beginning at the earliest work, and passing on to the latest of good character. One uniform system is followed right through. In over forty pages of summary good use is made once again of the sixty illustrations,—and a short general sketch of the features of Mediæval architecture produced. There are deficiencies of course, although the district is rich in good work of many dates; and it is not a book for beginners, being addressed in the main throughout to students who have received their initiation. The illustrations give views of towers and spires, of the exteriors and interiors of buildings, and parts of buildings, and an assortment of details. The record and the illustrations,—gleaned in part

from the sketch-books of the excursionists placed at Mr. Sharpe's disposal for the purpose,—will always keep the first of the excursions in memory, and call to mind a scheme which gladdened the leader and some of the members when they thought about it. It was proposed to make a book each year,—each one to form part of a series, constituting a very complete illustration of Mediæval art as practised in the churches of this country, from the Heptarchy to the Reformation."

This scheme remains a counsel of perfection, never likely to be practically realised. It was never dropped during Mr. Sharpe's lifetime, although it was not carried through. There is little likelihood of its being carried through now, on anything like the scale first talked about. Some one with ample knowledge, a good deal of steady enthusiasm, of leisure, and of money to spare, would be required to bear the burdensome parts of the work. Still, it has borne some fruit. "The Churches of the Nene Valley," which is a memorial of the third excursion,—1872,—is now before us. Some other works connected with the excursions will see the light some day. "The Ornamentation of the Transitional Period in the North and in the West of France" was nearly ready for publication when Mr. Sharpe died at Milan, in May, 1877. The materials for it were, to a large extent, got together during the first French excursion. The book on "Charente" is being pressed forward by a committee of the Architectural Association as a "Sharpe Memorial." In a month or two it will be complete, and will be at once a record of the remarkable excursion, in 1875, to Angoulême and the Département of which it is the chief city, and a permanent proof of the affectionate esteem felt for a man who was also deservedly honoured.

The 1872 excursion commenced at Stamford on Monday, the 19th of August, and terminated on Saturday, the 24th of August:—that good servant of the profession and the Association, Mr. J. Douglass Mathews, was the president for the year. The Nene Valley book is not an account of that excursion in the same way that the Lincoln book is of the 1870 excursion; but it contains, nevertheless, 112 plates of imperial quarto size (14½ in. x 10½ in.), dealing with parts of forty-six buildings. Northborough, near Market Deeping, supplies six plates; the noble church of St. James, Deeping, a quadruple plate and four others. From Polebrook Church,—about a mile from the Nene and three miles east of Oundle, a church little illustrated aforetime,—is derived material for nine plates. Of these plate 12 is a good example of clean spirited drawing of Transitional capitals, and Plate 83 an admirable drawing of the exquisite wall-arcade with north transept. More frequently, however, one or two plates only are devoted to a building.

Stamford has never been, and is never likely to be, in the valley of the Nene,—having its own Welland pleasantly disposed on the south of the hills which contains the most notable

of the fine churches; and in the flat land to the eastwards, the Deepings, Northborough, and their neighbours hang about the line of the Welland. The name bestowed upon the book has probably been given, as names are given to men, horses, and houses, not to express qualities, but to distinguish it from all others. Two-fifths of the illustrations, and nearly the same proportion of the buildings illustrated, belong to the Welland Valley; but to have introduced the Welland into the title would not have conduced to brevity nor to precision, for the Welland Valley extends a good way along the north boundary of Northants, and Market Harborough is near upon twenty-five miles west of the Stamford churches illustrated in these plates. After all, about six miles in a crow's flight is all the distance from Wansford (where the Nene finds an outlet to the eastward, and turns off towards Peterborough and the sea) to Stamford, which is the southernmost point in the course of the Welland, whence it runs to Spalding and on to Fossdyke Wash. Barring the ironstone which has tinged the buildings of the Nene Valley with a constructive polychromy from Ringstead southwards, the building materials are much the same throughout the whole district illustrated. In times when the carriage of materials was very hard work, it had considerable influence in cutting districts apart pretty sharply, or making them resemble each other, as the case might be.

The use of the brown ironstone is shown by etching on plate 46 (Ringstead, north ground-story), the darker stone being used in a rather irregular way,—a manner full of freaks. At Finsdon (plates 51, 52, 53, and 54), it is introduced a little more regularly, but not on any regular system even there.

Begun in 1872 and published in 1881,—the Horatian instruction, "*nonum prematur in ænum*," may well have been acted upon with reference to many of the drawings. Six hundred sketches and forty measured longitudinal elevations were produced during the excursion, and these formed the basis of the work, which has been, however, all brought into existence solely by Mr. J. Johnson and Mr. A. H. Kersey, two of the excursionists. They took the sketches and drawings, and used them as far as possible went over the ground again, paying more than one visit to some of the buildings, lithographed the drawings themselves, and proved them,—no lithographer's draughtsman working on any of the drawings. Transfer-lithography has been used almost exclusively for the plates. Mr. C. F. Kell has done his part in the lithography very well, and the general appearance of the volume reflects credit upon him. All the drawings have now been cleaned off the stones. Mr. Sharpe had intended to write a very complete text for the volume; but at his death he had not advanced very far with the work. What he left has been published without any great amount of addition. However pleasant its general scheme and an occasional sign of promise may be, the text is not very satisfactory as a whole. It is much

\* The Churches of the Nene Valley, Northamptonshire. By John Johnson and A. H. Kersey, Architects. The text by the late Edmund Sharpe, M.A. London: Batsford, 52, High Holborn, 1880.

too slightly laboured in parts. There is no list of illustrations of the district which have been published heretofore;—a list of this kind should be looked upon as absolutely necessary—as indispensable as a title-page and an index in a work of this kind. A description of the way in which the drawings have been completed shows that in them painstaking has not been spared. "Nearly every stone [of the masonry] shown has been measured; and, with very few exceptions, every drawing has been taken to the spot, carefully compared with the actual work, and the dimensions verified. The whole of the mouldings were most carefully measured as well as cymagraphed, and their sections drawn out full size; these have been reduced to their respective scales by means of the pantograph." Not a little ingenuity has been expended in packing information very tightly into the plates; sections of mouldings and other similar grouting leave very little blank paper on any page. Sometimes, in truth, one would part with a detail or two,—albeit with regret,—in order to get a better impression of the general proportions of an arcade. It is, of course, impossible to be ungracious towards a failing so evidently leaning towards virtue's side; there are little bits of fruit of extra study dropped in here and there, which show how much a man's heart has been in his work. A specimen plate (No. 8) has been reproduced, slightly reduced by photolithography, for this number. Warrington Church, near Oundle, is probably better known by its doorways and its Early English western tower and spire than by this arcade, which is, however, a handsome piece of Transitional work, with details of about 1170,—that is, in the middle of the period.

Part I. is the very special part of the book, consisting of sixty plates, devoted continuously to one subject. They are a set of parallel examples of main interior walls and arches, that is, practically of longitudinal sections, of churches, extending through all the periods of English Medieval architecture. The whole of a long arcade, drawn to a scale of 8 ft. to an inch, is supplemented by a single arch to a scale of 4 ft. to an inch. The uniformity of scale is admirable throughout. In each case there is a plan of the arcade, and generally sections,—all to the same scale. Plans at the springings of arches looking down on the caps, and plans of responds (1 in. = 1 ft.); cap and base mouldings (one-sixth real size), and sketches of all stops and carved work, complete the illustration in each case. There are in all forty-five of these ground-stories, ranging from St. Leonard's, Stamford, and (in plate 1) the beautiful Late Norman work of St. Peter's, Northampton, to the Perpendicular of Lowick (plate 60). It happens that the district is not so rich in pure Norman work, or in the later styles, as in the work carried out between the middle of the twelfth and the beginning of the fourteenth century. Put roughly, one-fourth of the plates in the whole book may be said to be devoted to what, in Mr. Sharpe's nomenclature, is known as Transitional work, 1145-1190; one-fourth to Lancet work, 1190-1245; and one-fourth to Geometrical, 1245-1315.

The other fourth of the plates deals with the work before the earliest and after the latest of those dates. The nave arcades,—always excepting St. James, Deeping, which is 94 ft. in length, and has seven arches,—belong to parish churches of moderate size, and are frequently under 20 ft. in height and 12 ft. in span of arch, and only three bays in length. Many of these small works are, however, of remarkable beauty. St. Peter's, Northampton, for Late Norman (plates 1 and 2); Barnack (plates 9 and 10) for Middle Transitional, about 1175; St. Leonard's, Stamford (plates 65, 66, and 67), for Late Transitional; Polebrook (plate 30), for Early Lancet, about 1195; the south ground-story of All Saints, Stamford (plates 32, 33, and 34), for Middle Lancet, about 1220; and the chancel of the same church (plate 35) for Late Lancet, about 1240; may be selected, as a rare series, out of the rest. They would be remarkable anywhere.

The parallels and contrasts, supplied by work of different date in the same buildings, are curiously interesting. Thus plates 11 and 12 show the north ground-story of Polebrook, dating about the middle of the Transitional period; and plate 30 shows the south ground-story, dating just at the turn to Lancet, and mentioned above as a work of great beauty. There are plenty of points of difference between these two sides of this church,—one executed about twenty years after the other,—and there is a similarity as

well, due to the instinct of a genuine architect, who improved as much as he could upon the general design, which custom would not allow him to copy line for line, all the while keeping near enough to it to serve the general effect.

The north ground-story at Barnack (plates 9 and 10) is not separated by more than about ten years from the south ground-story (plates 18 and 19). The main dimensions, the height and span of the arches, are within a foot of each other, the earlier work having, curiously enough, the wider spans and slightly lighter piers, the later being clustered piers, and the earlier a simple circular column. In both cases the arches are semicircular. Mr. Sharpe's remarks on some of the details are in his most felicitous style. The sight of so much good work, only partly "battered into shape and use," gives freshness to the regret felt for so many reasons for his loss. Delicate discrimination "by decades," as his well-loved phrase ran, appears in this piece of text:—

"On comparing plate 19 with plate 10, we notice,—that the zig-zag has entirely disappeared in the pier arches, the elegance of plan of the clustered pier, and the banding of the shafts, and the advance made in the increasing richness and rounded forms of the mouldings of the pier-arch. We notice, above all, the increased relief and nascent freedom of the conventional foliage, which has already begun to grow, as it were, out of the neck of the capital; the stems generally inclined one way, so as to follow one another round the capital, being prolonged into the deeply-relieved central rib."

By means of these parallels,—similarities and contrasts,—the essence of the book is seized at its best. Aldwincote St. Peter's (7, north, and 22, south, ground-story), work of three different periods; Helston (23, north, and 24, south, ground-story), simple Early Lancet work of very nearly the same date; Market Deeping (15, north, Transitional, and 37, south, Geometrical) supply further instances. In twenty-three plates (20 to 23, and 36 to 49) arcades, bearing a great resemblance to each other, stretch from the end of the twelfth to the beginning of the fourteenth century, and are all of about the same size, and with about the same amount of elaboration, that is, they are parts of the architecture of small village churches,—all without any pretension, but mainly excellent in their kind. The arches are simply splayed, not moulded, and a mask, a head, or a knot of foliage at the bottom of a hood-mould, or under a corbel, comprises all the carved work. Still each has its own expression; and, as they are examined in detail, the general similarity begins in a great measure to disappear,—in no two of them, for example, are the relative proportions of pier, arch, and intercolumniation the same, or the profile of the mouldings in capital and base alike.

Many of the problems which harassed our forefathers are apprehended as vividly as,—perhaps more vividly, if the imagination is not inactive, than,—in the buildings themselves. Fidelity meets with reward in the creation of this sort of thorough confidence in sceptical people,—to whom the plausible vice of "fudging" is only too well known by sad experience. With too much confidence is of slow growth, but is not easily affected when it has taken good root. By turning over these leaves, and giving to them sustained attention, one may, for instance, watch in much comfort the workings of the minds of designers, striving through many years, in this district as elsewhere, to get rid of unoccupied areas on the tops of abaci, to prevent also the edges of capitals from being reached by some of the arch-mouldings, and to get over some of the other difficulties in adapting the form of arch to pier, and of pier to arch. We give in this number a plate of details from three churches, cut out from six of the plates in the volume, and fitted together.\* Examples of changes to be found, after something like equal intervals, between the early part of the twelfth and the beginning of the fourteenth century, may thus be seen at a glance,—in respect of this point of the relation of pier and arch,—as also in respect of forms of arches, arrangement, and forms of moulding, and the carved ornamentation. The Norman square orders do not sit very awkwardly upon the caps of the large circular columns of St. Leonard's, Stamford (plates 5 and 6), for in effect a piece has been at each corner cut out of the square abacus and of the cushions below it. This method was imitated in the Transitional piers of the same arcade. Even over the octagonal cap of Warrington (plate 8) there are actual voids over portions of the piers, as also at Barnack (plate 10), &c. The piers, caps, and

arch-moulds of All Saints', Stamford (plates 32, 33, and 34), show that in getting round spire springs to the arches, justifying the fine spread of the caps, the arch-mouldings run hard upon the edges of the abaci. The south ground-story of the chancel of the same church (plate 35) shows one more attempt to do more effectually above a circular column what the Norman architects were trying at more than a century before. Thereafter little change is seen through several plates,—where the arches have more or less orders of chamfers, and the columns below them are mostly circular, and bear circular capitals. Earls Barton (plate 49) comes in with an arch, in which the quadrate arrangement of the mouldings is almost lost. Abaci, of flat curves on plan, have little or no unoccupied space on the tops of them. Finedon (plate 54), about 1340, has a little further movement in the same direction. About 1400, flattened arch mouldings, descending upon four octagonal caps above a grouped pier, have come near to a workmanly perfection in Early Perpendicular. St. Martin's, Stamford (plate 58), gives this idea in a slightly later form; and at the end of the list of plates Fotheringhay (plate 59) has no longer caps on the south faces of the piers, but the outer orders of the arch-moulds descend and give their shape to those portions of the piers.

If time and space and the reader's patience permitted, these sixty plates would naturally supply the text for much further discourse. For instance, the plates might be followed right through, and the way in which those of each section are arranged in chronological series might be discussed. While assent would be given in the main, there might be a little grumble now and then; as, that plate 36 comes rather earlier, and plate 41 rather later than it ought to do; and should plate 7 stand where it does, when more than two-thirds of the work in it is of the Geometrical period?

Part II. contains plates 61 to 96; thirteen plates of doorways, some windows, sedilia, and other internal work; the general drawings always 2 ft. to an inch, and the mouldings quarter full size. Among the doorways the Transitional north porch at Castle Ashby, the delightful Geometrical south porch at Woodford, the west porch at Higham Ferrers, and the 1440 west door at Fotheringhay,—each very perfect in its kind,—would be plucked out by a Master Horner with well-practised and chronological thumb.

Part III. has seventeen perspective views, ranging from the Saxon tower of Earls Barton to the (plate 112) characteristic Perpendicular tower of St. John's, Stamford. This part contains several good drawings,—the Transitional Eton and Early English Raunds are the best. It does not, however, equal in interest the part of the volume which deals in measured drawings. The "Reliques of Ancient English Architecture" published many good years, and the Nene Valley book, have several subjects in common; and the drawings of John Johnson, F.S.A., have not unfrequently the advantage of those of his later namesake. The chalk lithographs by Alfred Newman would not, however, lend themselves so well to reproduction by photolithography as the Nene Valley series of three which we shall give in a future number.

This is not the first time that the *Builder* has gone over the ground round about Stamford and along the Nene. In volume xxx. (1872) will be found three notices (pp. 660, 680, and 699) written during this excursion, which possessors of this volume will consider useful, as subjects are dealt with in the notices which are not touched upon in the volume. The concluding words on page 700, with reference to measured details, may be quoted here. They have gained force in the years which have passed, since good "staying" power has been shown,—as well as the power of being in earnest for a week. "It was no mere tour of inspection. A good deal of material was collected that may be more or less available for illustrations of buildings or details not already published. For instance, all the measured details were obtained which will be required for accurately drawing out the nave arcade, including, of course, sections of mouldings, &c., of each church visited. This must be admitted to be a good week's work, and highly creditable to the character for industry and application of the members of the Architectural Association."

Mr. Johnson and Mr. Kersey are still connected with the Architectural Association and the annual excursions,—the eleventh had Norwich for its headquarters in August last,—so that there is now something resembling a

\* See pp. 788, 799.

fixed custom and tradition in these matters. The lessons learnt from the elder days of art have never been applied by each of these architects in modern buildings, and notices and drawings of them have found places in our pages. Some of the power to deal skilfully with the problems of the present has doubtless come slowly,—as, indeed, it comes to most of us,—during and as the reward of long labours, in which a capacity for taking great pains has been well exercised. We do not think more can be done for this honest piece of good work than to explain this in detail its nature. All students of architecture should see that it is valuable, and why. The book will take rank as one of the best of our text-books, and may well serve as an example to be imitated occasionally by some one possessed of patience and skill. A person profoundly ignorant of the general features of the history, and of the technical details, of our national architecture, will not be able to make much use of it,—a fair amount of knowledge is necessary before it can be relished. That fair amount of knowledge would, of course, be acquired very soon if everybody would profit by being well-advised; but we are not sanguine enough to hope for such millennial signs. The young men of the architectural profession who have got through their first lessons may, however, be told expressly that they cannot do better than obtain "The Churches of the Nine Valley," follow through the history by the aid of the excellent geometrical drawings, and learn and practise for themselves in worthy actual buildings, the same method of analysis,—which has so evidently given to others nice perceptions and strong delight in excellent work.

#### THE RIGHT OF BUILDINGS TO SUPPORT FROM ADJACENT LAND AND PREMISES.

AFTER a long period of litigation commencing in the year 1876, the important case of *Angus and Dalton* has at length been decided by the House of Lords, as we mentioned in our last, and after the subject has been discussed in all the lower courts, and opinions, differing very considerably, have been delivered by most of the English judges, the public have at length a final decision, which once and for all has set the question at rest. To quote from the judgment of the Lord Chancellor, the main question at issue was "whether a right to lateral support from adjoining land can be acquired by twenty-seven years (or rather twenty years) uninterrupted enjoyment for a building proved to have been newly erected at the commencement of that time." It is quite unnecessary that we should point out the immense importance to the public, and to all who are professionally concerned with buildings, of this question; it is, perhaps, the most important decision, as regards buildings, which has been delivered for a great number of years. At the trial before Mr. Justice Lush the jury found a verdict for the plaintiff, who was the owner of the house which required support, and who had brought an action against the contractor who was working on the adjoining buildings, and against the Commissioners of Works and Public Buildings, who were the owners of these adjoining and supporting premises. The next step was the discussion of the question before the Queen's Bench Division, when the late Lord Chief Justice and Mr. Justice Mellor decided against the right which was claimed, and Mr. Justice Lush in favour of that time. After that decision we made some remarks (in 1878) upon this subject as explained by the judgment of the Queen's Bench Division. The Court of Appeal, however, reversed this decision by a majority of two judges to one, the dissenter in this case being Lord Justice Brett. Finally it came before the House of Lords, where it was considered a question of such difficulty and importance that the Law Lords had the assistance of seven judges who delivered opinions upon the point and were about equally divided in their views. On the 14th instant the final stage was reached of this historic case, for such it will become in regard to English law when Lords Selborne (the Lord Chancellor), Coleridge, Blackburn, and Watson gave their judgment in favour of the original plaintiff, the person who asserted his right to have the support from the adjoining buildings. At the time when the first decision was given we were far from opinion that the judgment of the

Queen's Bench Division was right, and seeing the difficulty of the subject and the great diversity of judicial opinion upon it, we have no feeling of regret that our previous and necessarily cursory opinion has not been that of the final Court of Appeal. We also placed our views on record that the balance of convenience was inclined against such a right as that claimed, and we confess that we are a good deal of the same opinion still. Of course there are inconveniences whichever view may prevail, but the Lord Chancellor's reasons in favour of the convenience of the right to support do not seem to us very strong. There exists, he states, a power of resistance to the ripening of the right by interruption. "They can always be interrupted, and that without difficulty or inconvenience, when a man wishes and finds it for his own interest to make such a use of his own land as will have that effect. So long as it does not suit his purpose or his interest to do this, the law which allows a servitude to be established or enlarged by long and open enjoyment against one whose preponderating interest it has been to be passive during the whole time necessary for its acquisition, seems more reasonable and more consistent with public convenience and natural equity than one which would enable him at any distance of time to destroy the fruits of his neighbour's diligence, industry, and expenditure." But it appears that it is not so easy to interrupt an accruing right of this character as it is, for example, to prevent the acquisition of a right of way or of a right of light. A window can have a screen placed in front of it, and a pathway can have a barrier put across it so that the enjoyment of both easements is prevented. But once a building is erected, and has begun to acquire a right to support, the only way to prevent the right from accruing clearly is by letting down the building. Suppose that the owner of the adjoining premises, if he asks the owner of the new building to admit that he has only a right to support as long as the former is willing to allow it, gets a refusal, obviously his only course is to excavate his land or pull down his own wall, as the case may be. And we confess that it appears to us very doubtful if owners of supporting property can be expected to bear in mind that they must take such stringent measures to prevent burdens of a serious kind from attaching to their land,—burdens, too, which may sometimes prevent them from even employing it as they desire. "There are some things," said the Lord Chancellor, "of which all men ought to be presumed to have knowledge, and among them, I think, is the fact that, according to the laws of nature, a building cannot stand without vertical (or ordinarily) without lateral support." And further on the Lord Chancellor states that any one having seen a new building erected, can form some judgment as to its weight and the amount of support which it will require from its outward form and appearance, and then he proceeds,—"Having this knowledge, it is, in my judgment, by no means necessary that he should have particular information as to those details of the internal structure of the building on which the amount or incidence of its weight may more or less depend. If he thought it material he might inquire into the particulars, and then if information were improperly held from him, or if he received false or misleading information, or if anything could have been shown to have been done secretly, the case would be different." But it is now clear how difficult a task is thus now placed on adjoining owners, and how much may depend upon a very slight inquiry or a very slight omission to inquire. As soon as a new building is being erected at the boundaries of a property or against an adjoining house, there will be no safety without diligent inquiries and investigation, and when these have been conducted, possibly without some violent interruption of accruing rights in order to keep those future. And we confess that the balance of convenience seems to us rather in favour of making a man who erects buildings at the edge of his land or against adjoining buildings obtain an express grant from his neighbour of a right to support if he thinks it necessary; and if he does not take the trouble to obtain it, that his building should be erected at his own risk. The law, unless the Legislature should think proper to alter it, is now, however, finally fixed, and therefore we have been endeavouring to bring as vividly as possible before our readers the results and consequences of this decision in order that its practical effects may be appre-

ciated, and its immense importance clearly recognised by those who are affected by it.

But it is impossible to quit the judgment of the House of Lords without pointing out that the right to support was based upon two grounds. One was, that a grant, or some lawful title equivalent to it, ought to be presumed after twenty years' enjoyment of the right to support. This is, of course, basing the right on a mere legal fiction; but, as the late Lord Justice Thesiger observed in his judgment in the Court of Appeal, "Such a fiction, like other fictions, may be open to the strictures passed upon it, but whatever may be its merits or demerits, it is too much to question the validity of its introduction. The doctrine of a lost grant forms part of the law of the land, and is, after all, but an extension of the fiction which had previously formed the basis of prescriptive titles; for every prescription imports a grant, which, in most cases, no one believes in." The common-law prescription arising from a lost grant was therefore the chief ground of the decision, and the one on which the case had been decided in the court below. The Lord Chancellor was, however, further of opinion that the claim could be supported under the second section of the Prescription Act. In the court below, Lord Justice Thesiger observed that the right in question "was not an easement coming within the Prescription Act, appears also to be generally admitted, and is assumed by me." A great portion of the Lord Chancellor's judgment went, however, to show that the right was within this Act. Shortly speaking, he considered the words "other easements," in the second section, to include this right, having previously shown that it was a right which was capable of being acquired by prescription, or rather by possession, since it could be long-continued and peaceable, and so capable of coming within the Act, if the words of the statute would permit. It is impossible, however, to discuss the interesting legal question thus raised by the Lord Chancellor at length: it is sufficient to point out that he bases his decision on it as well as on the fiction of a grant to be presumed from an enjoyment of twenty years. The practical result of this decision we have already pointed out, but the state of the law as it now exists cannot be more clearly or completely stated than by another quotation from the judgment of the late Lord Justice Thesiger,—  
"The right of support for buildings by adjacent soil [and, we may add, by adjacent buildings] is one which may be acquired by proof of uninterrupted enjoyment for twenty years. But the question still remains whether the right of support acquired by user is an absolute one attaching itself to any house which has stood the requisite time, or whether any limitation is to be put upon the right. But a user which is secret raises no presumption of acquiescence on the part of the servient owner, and as a consequence no presumption of right in the dominant. If, therefore, a particular house were, by reason of some intrinsic or extrinsic weakness of a serious character, or owing to unreasonable method of construction, to require a greater amount of support than houses of its kind usually require, the mere enjoyment in fact of that extra support [which the Lord Justice obviously means was not observable] would not raise the presumption of acquiescence on the part of the servient owner, or create a right to that extra support after twenty years' enjoyment. If, on the other hand, a house is of ordinary stability and of reasonable construction [or, we may add, if there is any extra weight clearly apparent] it is equally clear that the owner of adjacent soil must be assumed to know the amount of lateral support which such a house must need, and is bound to afford it as a matter of right after the house has in fact enjoyed it for twenty years." The law, therefore, being now settled, it is important that all owners of property and those who advise them should carefully safeguard themselves against the accruing of this onerous and, we must add, not easily prevented right.

**Birmingham School of Art.**—An examination for fifteen free admissions to this school is announced to take place on the 1st of July next. Free admissioners may study in the school for two years, and they are then eligible to compete for minor scholarships of 5l. per annum, tenable for two years, at the expiration of which they may compete for a major scholarship of 40l. per annum, tenable for two years, with free admission to the classes.

## NOTTINGHAM UNIVERSITY COLLEGE.

NEXT Thursday Nottingham will be honoured by a public visit of Prince Leopold, the newly-created Duke of Albany. Three years before, save three days, the famous home of lace and cricket was rejoicing in another royal visit, its august guests on that occasion being the Prince and Princess of Wales. The connecting link between these two events is education. The Heir-Apparent and his gracious consort opened the restored Castle as a palace of art and a museum of local industries; the duty of Prince Leopold will be to declare open a magnificent pile of buildings which has just been raised, mainly at the public charge, for the promotion of scientific and technical teaching among all classes of the townfolk. The somewhat costly experiment of the Castle has been attended with ample success to justify this further venture in a direction not at present held too highly in favour by the local governments of our large towns.

Nottingham may, indeed, in this matter fairly be said to have taken a new departure. The town, both from its splendid natural position and the energy of its inhabitants, has always been held in repute,—but formerly its reputation was of a different kind. Marking, in the old time, the border between Danish and Saxon England, its possession was the object of many a sanguinary struggle; and long afterwards, commanding, as it did, the first bridge that spanned the broad and swift-flowing Trent, its position as a stage on the great north road was of vast importance. In those days Nottingham received many royal visits, but these were by no means uniformly of a friendly character. With its rock the pitiable story of Roger Mortimer is associated; and upon the same summit, long afterwards, was the banner of Charles I. unfurled on a spot,—now covered with sedate boules of three-quarters of a century or more,—still called from the event Standard-hill. The Reform period, too, left its mark on the town in grim and stern characters; but Nottingham to-day gladly forgets this phase of its history. Its present rôle is that of a pioneer in the cause of popular education, and in view of next week's ceremony, it may not be uninteresting to trace the origin and development of this movement.

This town has, in fact, some claim to the honour of originating the scheme for the localisation of our ancient universities. So long ago as 1871 it was determined, at a meeting of the supporters of the Mechanics' Institute, upon the motion of Mr. Richard Enfield, that it was desirable to establish classes at which workmen might have facilities for obtaining instruction in those subjects most important for them as artisans, fathers of families, and sharers in the political power of the country. Lord Ossington, the late speaker of the House of Commons, who was then president of the Institute, took a leading part at this meeting, and it is interesting to note that, with a view of carrying out what would have been her late husband's wish in promoting higher education among the artisan class in Nottingham, Viscountess Ossington has presented to the Corporation 300*l.*, the income to be applied in providing a scholarship at the College, to be called the "Lord Ossington Scholarship," and to be competed for annually by persons of the working class. As a result of the meeting to which we have referred, a conference of representative working men afterwards took place; but at this early stage the difficulty of obtaining suitable teachers appeared almost insurmountable. Other large towns, however, joined in the movement, and memorials were addressed to the universities with a view of obtaining the extension of their advantages to those whose circumstances prevented their personal attendance at the seats of learning. The Elementary Education Act had been promptly adopted in the borough, and the movement seemed to open a way for the necessary results of the operation of that Act. The undertaking was so successful that in two years' time university classes and lectures were established in the town, and have ever since been continued, the average sale of tickets being 1,248 per year. At the same time the Government science classes were continued with growing success at the Mechanics' Institute, and in other parts of the town, the total average of students being 530. It will be evident that such important educational machinery could not long be continued in operation without a need being experienced for an adequate central building in which it could be placed. New homes

were likewise urgently required for the public libraries and the Natural History Museum, which were both under the auspices of the Corporation, and in this joint want we have the origin of the handsome college which is now ready for use.

Early in the year 1875, the Town Council received an offer of 10,000*l.* from an anonymous donor, through Mr. Richard Enfield (whose name has already been mentioned as an early mover in the scheme), towards the endowment of suitable educational buildings. The Council referred the offer to a special committee, and after due consideration, it was resolved to erect one group of buildings calculated alike to meet the requirements of the anonymous benefactor, the pressing educational necessities of the town, and the exigencies of the libraries and museums. The site chosen for the buildings was the Horse Fair Close, a portion of land surrounded by new and handsome streets, and yet sufficiently central to meet all the requirements of the population. Those who know Nottingham at all will at once remember its spacious open Market-place, which is approached from the railway stations through densely-crowded and, in part, tortuous thoroughfares. North of the Market is a thickly-populated area pierced by what is, architecturally considered, certainly the finest business thoroughfare in the town, Market-street. The colonnade of the theatre faces the passenger at the top of this street, and scarcely more than a stone's throw further north is the University College, a pile which will in future go far to redeem the unusual poverty of the town as regards municipal architecture. There is, moreover, another advantage in the site selected. The east wing of the college faces the large cattle-market, and it is an open secret in the town that here will some day rise a town-hall, suitable to the wealth and importance of Nottingham. For the present, however, our business lies on the west side of Sherwood-street, with the University College. The style of the building is Gothic, and in the erection the efforts to obtain both external and internal harmony have been fairly successful. The principal front faces northward into Shakspeare-street. It is 260 ft. in length, and 60 ft. in height. The principal entrance gable in the centre projects considerably from the general line, and is supported by projecting gables at either end. These three gables have massive pinnacles at their angles, rising from the ground-line. The façade between the centre and the two end gables is divided into two-light windows, with shafts in the jambs, and with shafted mullions. The upper floor is formed into a continuous arcade of single-light windows divided by piers, formed of double-coupled columns. The ranges of upper and lower windows are, however, broken in the centre by effective projecting bay-windows, of different treatment, carried the whole height of the building, their lofty roofs being carried with the main roof. Four richly-treated dormer windows are placed between the bays and the wings. The central entrance gable is the principal feature in the front, and is divided on the ground-plan into three pointed open archways, with clustered columns and admirably carved capitals. Over these arches, on the first-floor level, are three large windows, by which the entrance-hall is lighted. These windows are filled with geometrical tracery, with shafts to the jambs and mullions. The upper part of the central gable is covered with diaper work and divided by a broad band of sculpture, representing a school of students of the arts and sciences, and also by three medallions in high relief of Sculpture, Painting, and Music. Another important feature of this front is the set of six statues, each 7 ft. 6 in. in height, placed on pedestals, and surmounted by canopies, which serve to indicate the purpose of the building. Thus, over the college entrance are those of Bacon and Newton; over the Free Library wing the statues of Shakespeare and Milton; and over the Museum wing, Watts and Carrier; and these statues, which are well modelled, are the work of Messrs. Farmer & Brindley, of Westminster. From the centre of the front, at the junction of the side roofs with that of the principal gable, rises a spire of wood, covered with lead, to the height of 120 ft. The façades towards South Sherwood-street and Bilbie-street are similarly treated to the principal front, with which they group in picturesque outline. The building throughout is executed in a bright, warm Ancaster stone, and the roofs, which are lofty, are covered with Westmorland slates in bands, terminated with a handsome

wrought-iron ridge cresting. The chimneys are in cut-stone work, with projecting and recessed sides, with moulded bases and cornices. The liberal use of stained-glass in the principal windows also adds considerably to the richness of the building, the general effect of which is heightened by its broad surrounding space, laid with grass, and planted with trees.

The interior of the building is admirably arranged for the various purposes for which it is intended. The public library occupies the Sherwood-street side, with a central reading-room, 90 ft. long by an average of 45 ft. wide. Above is the reading-room and reference library, an apartment of the same proportions, and lighted from the roof as well as the sides. A committee-room and students' reading-room are provided on the second floor. The opposite portion of the building contains the Vertebrate and Invertebrate museums, occupying respectively the first and second floors, whilst the basement is devoted on the one side to rooms for the unpacking of books, and on the other to workrooms for the preparation of specimens, communication being obtained with the upper floors by means of lifts. Behind the principal entrance are placed the three theatres for chemical, physical, and general lectures, the two former having laboratories, workrooms, and professors' rooms attached. All these apartments are fitted with the newest improvements, and no effort has been spared to render them complete. The largest theatre, intended to be used for popular lectures upon scientific subjects, will accommodate 600 persons, and is illuminated from the roof by two sunlights, which are lighted by means of an electric battery. The Chemical Theatre will accommodate 220 students, and the Physical Theatre has seats for 100 persons. Attached to this last room is the balance-room, in which is fixed a special table, resting upon the solid rock which forms the foundation of the building, in order to avoid any tremor of the fabric which might be caused by passing vehicles, interfering with the carrying out of delicate experiments. The optical gallery, for experimenting in light, is said to be one of the finest in the kingdom. It is 125 ft. in length, and admirably constructed. All the fittings of furniture throughout the building are in American walnut. The entire cost of the works, including furniture, fittings, and decoration, is about 70,000*l.*, which, with the value of the site, 30,000*l.*, raises the total to 100,000*l.* Messrs. W. & R. Mawson, of Bradford, are the architects.

The plan of study to be pursued in these buildings merits, in conclusion, some notice. The first object of the council is that the college shall be open to all classes, without any distinction, and especially without any religious test. Although scientific and technical teaching will occupy a large space in the curriculum, the classics are not to be omitted,—the experience of the Mason College at Birmingham proving the necessity of teaching both Latin and Greek. It is hoped that under the improved conditions the university extension lectures and classes will be more largely attended than in the past; and that the same influence will also favourably affect the attendance at the Government science classes. A most important department of the work will be the technological school, the instruction given in which cannot fail largely to affect the welfare of the town. Classes will here be formed for teaching, in a more direct manner, the theoretical parts of certain trades, and it is hoped that assistance may be received in this particular branch of study from the City and Guilds of London Institute. The teaching is to be largely directed to those branches of knowledge which are capable of practical application in the various industrial pursuits. It is to be distinctly understood, however, that the classes are not so much for the teaching of trades, as for teaching those subjects which underlie work and bear upon trade, by helping to develop the intellect of the workman. Besides the resident professors and their assistants, the teaching in the college will be carried on, as has already been intimated, by university extension lecturers from Cambridge, science teachers from South Kensington, and technological teachers. It is estimated that the number of students who will avail themselves of the college will not be less than 1,400. As the council desires to bring these educational advantages as far as may be within the reach of the working-class population, a large proportion of the lectures and classes will take place in the evening. Most of the professors and

other members of the educational staff have already been appointed, and the work of the college will commence about September next. The great aim of the council throughout this large undertaking has been to provide an opportunity for the efficient education of every person in the town. A promising lad may, by this means, advance from the elementary school to the high school, and from the high school to the university, where it may be ultimately possible for him to complete his studies, and take his degree, in the same way as if he were at Cambridge or London. The work has already met the approval of many eminent and distinguished men, including Mr. Gladstone, who was present, and displayed great interest at the ceremony of laying the foundation-stone of the college in September, 1877, on which occasion he closed his speech with these significant words,—"Every man must wish you God-speed in this work. It is a good work, it is a noble work, an intelligent work, and, I might say, a holy work."

The preparations for the reception of Prince Leopold are now almost complete. The town will not be decorated on the same elaborate scale as marked the visit of the Prince and Princess of Wales, but all the leading inhabitants will take care that the festive character of the proceedings shall be duly marked. The opening ceremony will be of the least formal description possible. After the Prince has inspected the college, and formally declared it open, he will lunch with the mayor and a distinguished company, both of residents and visitors, and he will leave the town early, in order to dine at Bestwood Lodge, the seat of the Duke of St. Alban's, whose guest he will be during the visit.

#### IN MEMORIAM: SIR JOSIAH MASON, KNIGHT,

Ob. June 16, 1881.

The death of Sir Josiah Mason cannot be allowed to pass without the payment, in the columns of the *Builder*, of some tribute to the energy, the sagacity, and the charity of a man, with regard to whom we may be proud to make use of the concluding lines of the ballad of Chevy Chase. It is because England has her hundreds of men in great measure, if not altogether, "such as he," that England has attained her place in the world. Whether we regard the career of Sir Josiah Mason as an example of what may be attained, by genius and perseverance, by the Englishman, though ever so lowly born; or whether we regard the wise, patriotic, and noble use that he made of his vast wealth, we shall find equal subject for admiration. The chances are ten to one that the pens which have announced his death are the production of his skill,—skill first as an inventor, or rather as an improver of the first rude iron pens; and then as an organiser of labour and a great manufacturer. Mason was a remarkable instance of a man who possessed what is at once the rarest and the most enriching quality of a man of business, we mean sagacity. Brilliant as is the genius of the inventor, the cases are very rare in which it has brought wealth to its possessor. But the cases are less rare in which that sagacity which can duly estimate the value of an invention has brought wealth. It may not be thought impertinent to add that this business-like sagacity also eminently characterised Mason's partner, Mr. Perry. When he saw the first pens that Mason made, he saw that there were millions of money behind them; and on that perspicacious foresight were based the fortunes of the great firm of Mason & Perry.

Another of the new triumphs of the natural magic of the nineteenth century was appreciated by the keen mother-wit of Mason, and grasped by him as a source of wealth. He joined with Mr. Elkington in the development of that exquisite method of casting metal which is known by the name of electrolyte. This discovery is,—not forgetting photography,—probably the grandest service which science has rendered to art. We do not allow that, with persons of refined taste, the finest electrolyte can rival in value a genuine piece of hand-work in silver, or even in bronze. And there is a remarkable element of instability in electrolytes, to which we are not aware that attention has been yet called. We have found in the case of a very beautiful reproduction of a Greek coin in copper, which was first silvered, and then

gilt, by electricity, some internal galvanic action to set up, which made the copper sweat through the gold, and constantly tarnished the medal. We do not speak from personal experience as to a like action in larger objects of the same kind; but we cannot conceive our own case to be a singular one. Of course, this will not apply to electroplating on nickel; but as regards facsimiles of great works of the goldsmith, it is very deserving of note. That, however, being borne in mind, the means thus afforded of obtaining facsimile copies of the works of Cellini or of the Greek portrait sculptors is one of the most valuable aids yet afforded to the artist and the lover of art.

The money thus sagaciously earned was nobly laid out by Mason. He is said never to have taken up anything by which he lost money; and when this degree of wisdom is possessed, the possessor need not trouble himself further. Money then makes itself. How to dispose of it becomes the trouble. There are not a few instances of the difficulty thus experienced by humble,—or humbly-sprung,—millionaires. An orphanage, founded and endowed, near Erdington, at a cost of 280,000*l.*; a set of almshouses, of which we are not in possession of the cost; and the Mason College of Science, built and endowed at an outlay of nearly 300,000*l.* at Birmingham,—are the offspring who will hand down the honored name of Mason to a remote posterity. Happy, indeed, the self-made man who has no other children! The offspring of humbly-nurtured *nouveaux riches* generally show the strongest tendency to reversal. It is well when a man who achieves such a triumph over the world has only his fellow-men at large for whom to care.

Reverting to what has been recently said in our pages as to practical education, it may well be conceived that we should give the highest tribute of admiration to educational institutions founded upon that principle,—and so we do; but it is not in things human to be perfect. If ever the time should come when practical education, primary as are its claims on our support, should abate aside the study of the classics, of Euclid, and,—highest effort of the human mind,—of Aristotle, by those who are born to take the position of leaders and teachers of their fellows, it will be an evil day for England. Thus the protest against "mere literary education and instruction," which is contained in the trust-deeds of the Mason College, has its weak as well as its strong points. It might, perhaps, be better to put a lad at once to a forge or a foundry than to send him to a grammar, to prepare him for some *outré* competitive examination. But if cram kills literature and philosophy, which it is on the way to do, the substitution of art and industrial science scholarships will be but a poor, mean, and beggarly sequel, inducing a movement ever tending to run down hill, unless elevated and controlled by learning, by taste, and by imagination.

A detailed sketch of Sir Josiah Mason's remarkable and encouraging career was given by us last year (see vol. xxxix., p. 421). In the same volume we gave particulars (pp. 321, 439) and view and plans (pp. 444, 446-47) of the Mason Science College, Birmingham. A view and description of the Erdington Orphanage were given in our volume for 1869 (vol. xxvii., pp. 744, 747).

#### SOME POINTS OF COMPARISON BETWEEN THE FINE ARTS.

"Comparisons are odorous."—*Shakespeare*.

The following remarks relative to the fine arts (poetry, painting, sculpture, architecture, music, and the drama) may not be uninteresting to their lovers.

These arts in various ways and degrees imitate nature, but are none of them imitations only, though, strange to say, some of the greatest men have fallen into the mistake of supposing painting and sculpture to be nothing more, and that their proper aim is to reproduce nature literally. Plato, as noticed by Sir J. Reynolds, speaks of painting as if perfect imitation, to the extent of deception, was its ultimate object. So does Pope in his epitaph on Sir Godfrey Kneller. But Johnson, Goldsmith, Cowper, Charles Lamb, Byron, Sydney Smith, and other eminent men, evidently had no higher notion. If this were true of these arts, they could not be fine arts at all, or sisters of poetry. But their object, equally with poetry, is to supply the natural deficiencies of things, and often to gratify the mind, by realising what never

existed but in the imagination. The imagination is here the residence of truth, which, as Lord Macaulay says, is the object even of those works which are peculiarly called works of fiction, but which, in fact, bear the same relation to history which algebra bears to arithmetic.

Poetry, by the possession of the literary element, words, the instrument nearest to the mind itself, can distinctly assert a truth or state a fact, which no other of the arts can do. By virtue of this instrument the range of poetry is infinitely wider than that of any other of the imitative arts, and effects are within its power to which painting and sculpture can never attain. The sculptor can imitate only form; the painter only form and colour; poetry holds the external world in common with her sisters; but her home is amidst the intricacies and mysteries of the heart, which is the province of poetry and of poetry alone.

Care must be taken, however, not to attribute too much relative value to the phonetic element in art. It is, I think, by doing so that Dr. Ferguson, in one of his earlier works, in which he gives a tabular comparative view of the arts, showing the proportion in which the three elements of technic, aesthetic, and phonetic enter into each, arrives at the conclusion that eloquence is a higher art than epic poetry. The design of poetry and the arts is to speak through the heart to the head, by which they can have a greater effect upon the latter than by dint of the phonetic element going immediately to it.

Again, poetry appeals more directly to the mind, and has less to do with the senses than any other of the arts. While painting, sculpture, and architecture are addressed to the mind through the eyes, and are appreciable to the touch; while music is a communication of emotions to the soul through the ear; and all four please the eye or ear before they reach the imagination, poetry has nothing to do with the eye or ear, but to go through one of them as a gate, according as it is read or heard, to the mind. It may be said to be a direct communication of soul with soul; for the eye in reading does not see the poem or its images in the book, the words of which are merely symbols of the author's ideas or instruments of the art, the objects of the building called the Parthenon is the real work of Phidias and Ictinus; the statue of David, at Florence, is the real work of Michelangelo; but the printed Greek book, called the "Iliad," or the MS. from which it was printed, is not the immortal poem of Homer, but only a set of conventional straight and curved black strokes. Moreover, while time has some dominion over pictures, statues, and buildings, poetry, so long as human language endures, may bid him defiance. We can imagine an ode or elegy, like spirit, immortal by means of printing, which could reproduce the symbols representing it through eternity. And while the works of the painter, sculptor, and architect are material, tangible, local, comprised each within a limited space and destructible utterly, a poem is, like a spirit, invisible, intangible, and unconfined; and may be revealed by its symbols to the soul in any corner of the universe. It could be lost by the destruction of its copies, but it may be rendered ubiquitous almost by multiplication of them. Words themselves are the common property of all men; yet, "from words," says the late Lord Lytton, "the poet piles up temples that shall outlive the pyramids; and the very leaf of the papyrus becomes a Shinar stately with towers, round which the deluge of ages shall roar in vain."

On the other hand, while painting, sculpture, and architecture are self-dependent, poetry is dependent on the instrument, words, or letters for its existence and manifestation. So that if all languages were forgotten, all poems would be lost, as indeed would all histories and literature. "Othello," for instance, depends for its existence on the duration of the English language, as does the "Iliad" on the duration of the Greek, and the "Æneid" on that of the Latin, making no account of translations. The work of the painter, sculptor, and architect, being self-dependent, can never be lost except by intentional violence or neglect, and their language is not only universal, but unfailing. It is in form alone the ideal can be rendered permanent.

Music has the same advantage of painting and sculpture that poetry has in being able to set time at defiance and exist by the perpetuation of its symbols for ever; while it shares in her disadvantage of being dependent upon a conventional language, in her case the musical

notes, for its existence, which language, however, is superior to the literary language in being universal. If this musical language ceased to be understood, the great musical compositions would be no more, though they would cling to the memory of men more tenaciously and more generally than poetry; from which cause, doubtless, many musical compositions were handed down ere the musical language existed. It is an historical tradition in the Church of Rome that the Ambrosian and Gregorian chants were originally sung in the temples of Olympian Jupiter.

Of all the art-sisters, music is the most domesticated,—the most associated with the various events of our lives, with our pleasures and pains, triumphs and humiliations. It is of all the magic circle the most sought for to express our joy, to soothe our sorrow; in which latter it is peculiarly welcome. We do not sooth our griefs with painting, or sculpture, or architecture, but with music, which is welcome to us in moods in which nothing else could please, and its various kinds,—anthems, glees, dirges, marches, &c.,—correspond to our various circumstances. It includes younger and humbler followers than any other of the arts, boys and girls who have no idea of poetry or painting being often good singers and instrumentalists. As might be expected, nothing comes to us so laden with associations as a song sung long ago. That music will charm where all the other arts would be powerless seems to have been the faith of remote times. Polybius tells of a savage nation civilised by music; Terpaner is said to have appeased an insurrection in Laocæmon by his songs. It alone can reach the heart of the brute. The ancient poets expressed their sense of its power in their account of the skill of Orpheus, Amphion, Mercury, and the Sirens, especially of the first, Calliope's enchanting son, who sang,—

"Such notes as, warbled to the string,  
Drew Ixion tears down Pluto's cheek,"

which caused the wheel of Ixion to stop, the stone of Sisyphus to stand still, Tantalus to forget his thirst, and the Furies to relent.

But the greatest glory of music is that, more than any of its sisters, it is able to kindle devotional fervour and lift the soul heavenward. It rouses the sublime passions, and gives to the soul glimpses of ideal or visionary beauty and rapture, and awakens passions of which we were previously unconscious. Through this faculty it has in all ages been the most valuable handmaid of Religion, and employed in divine worship, public and private. Music formed a very important part of the festivities and religious services of the Jews. The priesthood were musicians by office, which was hereditary. Gratitude for the passage of the Red Sea was expressed by song, sung by Moses and responded to by Miriam, attended by all the women with timbrels in their hands. David, who is said to have played on thirty-six instruments, separated to the musical service the sons of Asaph and others, who should prophesy with harps, with psalteries, and with cymbals. In his own mind music would seem to have been inseparably connected with the worship of God. His harp, with vocal accompaniment, was his instrument of communication with Him, as the whole of his psalms, which embody the universal language of religious emotion, attest; and he exhorts all to the same exercise with the harp, the psalter, and an instrument of ten strings, with the timbrel and dance, the loud and high-sounding cymbals. Among the glorious things spoken of Zion, the city of God, is,—“As well the singers as the players on instruments shall be there.”

Music, united to poetry, intensifies and seconds its strokes, like the tones and modulations of the voice in an oration, and raises the poetry into rapture.

A drama differs from all other art-productions in being in itself incomplete, and indebted for its full development to other arts. While the printed epic commits to the mind of the reader the entire poem, the printed drama is a mere skeleton, to be clothed with flesh in the shape of stage-scenery and decorations, music, and acting, chiefly the latter, which is based on the fact that nature has assigned to every passion its peculiar cast of the countenance, tone of the voice, and gesture of body, more especially the expression of the face. The whole stage,—actors, music, scenery, &c.,—is to the written tragedy or comedy what a musical instrument is to the music. It is one great instrument or organ, through which various plays are presented to the sight or hearing of an assembly. The opera

and masque are in similar case to the drama as regards dependence on other arts.

The productions of architecture differ from those of all the other arts in having fixed local positions, like trees or mountains, and in being all-in-all in themselves,—the real final objects of the art, not representations of something higher. A palace or church stands for nothing but itself; you have only to look at it, not to look through it to anything beyond it. Yet it speaks to the imagination, which renders it prolific, till it throws off higher and brighter images, like music, between which and architecture there is striking analogy.

There has ever been a tendency among imaginative people to connect the idea of music with the motion of the heavenly bodies; or the visible beauty of motion with the audible beauty of sound, originating the expression “the music of the spheres.” In Scripture imagery “the morning stars sang, together”; and, sings Shakespeare, paraphrasing this passage,—

“There’s not the smallest orb that thou beholdest  
But in his motion like an angel sings,  
Still quiring to the young-eyed cherubim.”

Milton, also, in “Arcades,” refers

“To the celestial Sirens’ harmony  
That sit upon the nine infolded spheres,  
And sing to those that hold the vital shears.”

But the relation of music to motion is only a fanciful one. It has a real relation to beautiful form, as in works of architecture, which have been justly conceived of as arrested music. They have a similar effect on the mind to musical compositions. Like music, a piece of architecture excites sensations or emotions instead of ideas; awakening, according to its kind or class, the agreeable, delightful, or sublime passions.

Architecture, unlike all her sisters, has to minister to the lower necessities of man as well as the higher, and through this it is that there is centred in her works such strange extremes. Like ourselves, they are

“From different natures, marvellously mix’d  
Connexion exquisite of distant worlds.”

Built generally to serve the perishing body, but wrought into shapes of beauty to delight the immortal spirit; consequently, though a soul-born art, architecture, influenced by climate and building material, like plants and animals, presents a different aspect and character in every region of the globe.

The mutual influence of the arts is an interesting subject of speculation. It was Homer that inspired Phidias to the conception of his Olympic Jupiter; as, doubtless, Phidias and the other “magicians in marble” reacted on the poets. “For,” says Lucian, “we adore Phidias in his works, and he partakes of the incense we offer to the gods he has made.” Among the Roman poets Horace is eminently statuesque. Lower down in time a remarkable instance of the influence of painting and sculpture upon poetry may be seen in the Italian poets, whose peculiar power of presenting sensible objects to the imagination has been attributed to the circumstance that painting and sculpture had attained a high degree of excellence in Italy before poetry had been much cultivated; by which it came to pass that Italian poems are pictures painted by words. The poetry of Dante, as noticed by Macaulay, is picturesque beyond any other. On the other hand, Hallam has drawn a parallel between the styles of Ariosto, Tasso, and other poets, and the works of Correggio and certain painters; and thinks Tasso had great influence on the Bolognese school of painting.

An exceptional instance of the influence of the drama on painting may be seen in Hogarth, who invented a species of Dramatic Painting chiefly directed to satire. The “Marriage à la Mode,” which is virtually a drama in six acts, has been compared with the poetry of Crabbe. In his tragic-comical vein, Hogarth’s works are analogous to those of Swift. He has been said to write rather than paint with the brush, there being in his pictures so many collateral points rather hinted at than expressed that they can only be noticed in succession.

That sculpture and painting have helped each other is what might be expected. The great impulse given to Florentine art at the beginning of the fifteenth century, which prepared the way for Fra Angelico, Masaccio, and other precursors of Raffaele, was, according to Vasari, through the advance made in sculpture by Lorenzo Ghiberti, Donatello, and Lucca della Robbia.

SAMUEL HUGGINS.

## THE PARIS MUSEUM OF DECORATIVE ART.

WE have more than once in these pages referred to the Paris Museum of Decorative Art,—strangely enough, a perfectly new institution in that highly decorative city. The promoters of the Museum have made no attempt to conceal their effort to emulate our own South Kensington Museum, and so far as they have gone they have met with the most friendly co-operation and sympathy from Sir Philip Cunliffe Owen and the South Kensington authorities. It was but the other day we found a number of English workmen busily employed in the wing of the Palais de l’Industrie, in which the Museum is now placed, erecting a magnificent gift from South Kensington, consisting of a gigantic cast from the famous Indian Temple of Sanchi. As one goes through the very few rooms that the Museum at present owns,—and which have been recently thrown open after having remained for some weeks closed,—one is again and again reminded of the Museum at South Kensington, by the inscription stating that the object or objects have been the gift of that great establishment, and sadly does the French Decorative Museum stand in need of similar aid. France in this respect is unfortunately utterly unlike England. In France it is but a comparatively rare instance where the owner of great possessions either presents or bequeaths his treasures to the nation. Their laws of inheritance are unlike ours, and stand in the way of this advantage to the many; still there are individuals who from time to time have made some noble bequests, but it is difficult or impossible to point to any single instance like so many that we in England have reason to be proud of. Pride, charity, and benevolence are widely spread enough, but they partake of the old-established form, and are mostly dictated by the directions of the Church. The steady formation of such a noble institution as our British Museum, whose history is one record of splendid bequests in the century of its existence, would be scarcely possible in France.

The Museum of Decorative Art, as one now finds it, appears most interesting from its struggling against difficulties, difficulties which doubtless the promoters are slowly overcoming, but which certainly have the appearance of very seriously handicapping the efforts of the directors. When last year we visited their first promising exhibition there certainly seemed every reason to feel that there was a chance of rapid progress, but when, after the Museum has remained closed during a lengthened period for changes and the arrangement of additional exhibits, we again find, on the reopening, that so little has been added, and that little of so small an interest, we almost despair of continuing in our sympathy for the struggling difficulty of what appears to be a too inactive management. Of course, we are exceedingly glad and happy still to see M. Galland’s admirable decorative studies and sketches. It is impossible to estimate too highly such works, or the somewhat similar decorative designs of M. Mazerolle, who, however, sends little beyond the exceedingly-elaborate studies made two or three years since for the decoration of the ceiling of the Théâtre Français, a decorative work of modern art, which certainly entitles M. Mazerolle to be regarded as the master of that peculiarly French mode of wall and ceiling painting that they have inherited from the earlier masters,—a mode of decoration that scarcely, for any single year for several centuries, has been altogether idle.

No doubt M. Galland, who holds the exceedingly-honourable position of Professor of Decorative Art at the École des Beaux Arts, and M. Mazerolle, would, on the shortest notice, and in a limited stipulated time, most willingly undertake to cover with decorative motives the largest spaces in the largest buildings of this very big age; at the same time, it must be admitted that M. Galland especially seems very loth to finish, or even advance another stage, the two or three beautiful beginnings of small decorative pictures that he has exhibited now for two years,—pictures which, in their unfinished state, beautiful as they are, are already beginning to have an antique look, even in the lifetime of the gifted artist whose studies, surrounding these two pictures, appear after all more like imitations of the great Renaissance masters than pure emanations from a fertile brain; they possess, in fact, the sort of originality that comes from a wide knowledge and acquaintance with other men’s ideas, and are perhaps

little more than learned translations, sometimes slightly too literal, and suggestive at times of an absence altogether of true feeling.

The whole aspect of the exhibition this year cannot be said to be improved; there is the same magnificent collection of Mediæval and Renaissance woven tissues, but still inferior to many on the Continent, notably the collection of the German Museum at Nuremberg or that at Munich, but sufficiently complete to be highly instructive, and certainly comprising specimens almost from the earliest known periods of the art of the weaver and the embroiderer,—one piece of woven linen of Egyptian fabric dates from several centuries before Christ,—down to the last marvellous imitations of Lyons and other industrial centres.

There are some new studies by that favourite French decorative artist, M. Puvis de Chavannes, in which the decorative artist appears anxious to show with how much difficulty he produces so little effect in the fifty or sixty frames that he exhibits, each frame containing several small sketches such as we are disposed to think many artists would allow to reach their waste-paper basket.

The specimens of hand-work embroidery on sage-green and old gold-toned velvets and cloths that are here exhibited cannot by any one be regarded as good specimens of this now popular and much-abused method of decorating furniture; and when one considers the original motives for this style of ornamentation,—when one recalls the specimens that are still in existence, with their well-proportioned delicate fringes, considered as carefully almost as the architectural mouldings of great works, of the beauty of form and colour, position, and object of the tassels, contrasted with those hideous bobs in various tints which now take their place, we are surprised to find imperfect specimens of this kind of work exhibited for our instruction at the French Museum of Decorative Art. It is quite certain that this mode of decorating furniture has become a hideous abomination, but that it is a mode capable of attaining desirable results is shown by the existence of a few rare early specimens, chiefly of the seventeenth century, and the successful imitations by very skillful artists. We have seen at Jackson & Graham's, and at Tetel's, in Paris, some of these that are worthy to be placed alongside our most cherished pieces of furniture.

A very instructive collection of wood-carving has been newly presented to the Museum by M. Slein,—a fine beginning for what may probably follow. In addition to these original specimens of pure carving in wood, a number of casts in plaster of Renaissance work have been placed by their side for the instruction of the artist and the mechanic. In another portion of the Museum is exhibited a fine collection of casts from old locks and other ironwork, and a magnificent collection of small works in terra cotta has lately been presented to the Museum by M. Mociet; and in a case by their side the authorities have placed a tolerably good collection of those most charming of all terra cotta, the small female figures so delicately designed and so exquisitely painted,—those smiling, thinking, moving, captivating girls unearthed at Tanagra, although it cannot be said of this latter collection that the specimens exhibited are of the finest,—an object which should never be overlooked in a museum aiming so high as this.

#### A STRANGER IN LONDON.

THE traveller or the stranger in London who proposes to himself the pleasure of a journey from one end of the metropolis to the other,—from the east to the west, or from the north to the south, or to circumnavigate the famous city,—has before him a task involving no small interest and not a little labour.

Time was, we all know, when London was confined, like so many other great capitals, within a limited area,—confined by the city walls, with gates and bars and all the paraphernalia and impediments of corporate authorities. Those were the times have been so often called "the good old times,"—times good, doubtless, in some respect, but leading certainly to better, although who can say, at the rate we are now going, when we are to arrive at the best? London has long been regarded, especially by intelligent foreigners visiting us, not so much as a city, but as almost an accumulation of cities, and Londoners have themselves been too used to its enormous size to be aware of how much in this respect it exceeds

other European cities. Few of the thoughtless visitors to Paris who come away over-pleased or otherwise with that beauteous capital, are aware that within the area that people understand by the city of Paris the population is scarcely one-half of that of London, and in all those sources of admiration or of complaint that so many of us indulge in, whether at home or abroad, the thoughtless are too apt to overlook the enormous advantage that climate gives to our friends on the other side of the Channel.

"*Ingenia hominum locorum situs format*,"—

classic authority assures us. Still, the stranger in London, whether he has only been absent for a sufficient time to allow of just comparison, cannot fail to be struck, on returning to London, especially after a lengthened visit to Paris, by the enormous superiority that the streets of the foreign capital possess over those of London in point of cleanliness and order; the one having arrived in a very large portion of its area at absolute perfection with regard to this important question; the other, our own beloved London, still overlooking the most obvious means of sweeping, watering, and removing heaps of dirt in order to secure ordinary cleanliness. The most familiar acquaintance with the filth and dirt of London,—that familiarity that is supposed to make us accustomed to almost any horror,—must still leave room for complaint at the state of London streets in very wet or in very dry weather, while the utmost familiarity with the oppos to in Paris never fails to appeal to our sense of admiration as we walk or ride through the rapidly-improving streets of the city.

In setting out, as we did the other day, with a friend for a drive through London, with a view to be shown some of the alterations and improvements that have taken place in the great metropolis within the last seven years, and starting from that charming district, the neighbourhood of Kensington Palace,—to the resemblance of which in a certain degree to Fontainebleau our friend called our attention,—we ourselves were reminded of what, until lately, we were not aware, that the trees of London possess a beauty of their own quite as characteristic as the lovely trees of the gardens of the Tuileries, and are far more beautiful than those of the Champs Elysées. With regard to the trees, it is surprising, notwithstanding the condition of the London atmosphere, how greatly many even of the old trees have increased, and how enormously they have added to the beauty of our city. The trees that have recently been planted on the Thames Embankment and in Trafalgar-square and in parts of Cromwell-road and on the other side of the water, are making tolerable progress, although the poplars in front of the South Kensington Museum, planted by Prince Albert, appear in a very sadly-neglected condition, whereas the fine group planted also by him on the south side of Buckingham Palace have improved immensely; but on the whole, the modern arborescence of London, or its commercial working, is far from being in the flourishing condition that it is in Paris, where it may be said to have arrived, as far as a metropolis is concerned, financially and artistically at perfection. One of the features in the Paris streets consists, not merely in the existence of the shady trees that do so much service in this way, and in adorning and concealing the monotony of the architecture, but in the fact that they give a new interest to the thoroughfare by the necessity of transplanting, and the paraphernalia connected with the process which allow trees of 50 ft. to 60 ft. high to be removed and replaced with comparative ease.

On returning to London after many years' absence, the most striking feature is undoubtedly the enormously increased height of the buildings. Not merely is the stranger embarrassed by the sight of a house like the Hanksy buildings at Westminster, but by the great height of all the houses that are now being erected, and in this respect the old feeling of the comparatively meagre look of our own city after a return from the Continent no longer exists. So far from that being the case, London appears, after a lengthened absence, and after visiting many capitals, to exceed all others in the importance of its public and private buildings, excepting, of course, such enormous works as the Vatican, St. Peter's, and the Palace of the Louvre. One feels amazed when one for years has been reading in so many English journals accounts of English architects and architecture of a nature to lead one to suppose that the art was almost

dead, that the professors were incompetent, and but scarcely able to manage their own business; but a ride or a walk through the City, or almost any portion of the metropolis at the present moment, supplies us with modern architectural features, the result of the modern thought of skilful artists, enough to satisfy even the fastidious.

And then the local changes! What a surprise is it to be taken to Sloane-street, for example, and to find, if old Hans-place, with its many memories, poetic and artistic, is all but the same, in its immediate neighbourhood, on the ground so long neglected until the days of Prince's, all passed away, and in its place the red brick houses now being all but completed, which occupy what is called Cadogan-square,—a spot that old Londoners so well remember, no longer to be visited, and the houses of dear old friends replaced by magnificent mansions for, if not magnificent people, the possessors certainly of magnificent means. Is it possible that the time has really arrived when the prosperity of our country will allow many of us not merely to dream of occupying such dwelling-places, but to be actually in the possession of the means to allow us to do so with the calmness that the certainty of security brings so healthfully?

The London builders would appear to fully believe in this possibility, to judge from the arrangements they are making in every direction; but is it not somewhat ominous that at the moment when "the season" is "in full swing," so many white placards should meet the eye, and in the windows of so many of those "desirable mansions" that within a few years, have risen in the more favoured neighbourhoods of the metropolis?

But if the unoccupied houses seem to be many, how to count the whole neighbourhoods covered with houses, where but a few years since were fields? It no longer requires the man of middle or advanced age to recall open spots now crowded with bustling life; the short space of six or seven years has sufficed to convert around London many an acre of long-untouched gardens, fields, and orchards, into streets and roads, crescents, villas, and squares, thickly tenanted by a population which, in spite of the prediction that has been made, that London is doomed in time to be deserted for the country, seems content to live at many miles from real London in order to enjoy the supposed advantages of possessing a *propiété-terre* in the great metropolis, which daily spreads further its gigantic area, swallowing up remorselessly villages, towns, and suburbs, to afford accommodation for the thousand and the million whom the great resources of the capital, its pleasures, and its wants, draw irresistibly within its huge circumference.

#### LYE WASTE AND ITS NAILERS.

It is well for Great Britain that there are not many parts of it which show the phases of life and industry that parts of Staffordshire and its borders do. An iron manufacturing district, however picturesque its nightly presentation, can scarcely be a pleasant or a pretty locality, for it has a tendency to create huge mounds of refuse, to obliterate the green fields, to poison the sources of tree life, and to darken and to vitiate the atmosphere; but, added to these, there are certain characteristics of the iron industry and of one or two of its branches, as carried on in the Black Country, which taint the moral surroundings of the workers. That branch of the industry, and the unpleasant conditions under which it is carried on, may be recognised in half a dozen large villages and small towns between Birmingham and Stourbridge, and one which may be considered typical is the waste of Lye Waste.

Lye Waste is a populous place, a mile or two from Stourbridge, and practically the whole of its population, of some 7,000 or 8,000, find support in the branches of the mining and metal trades. It is stated that refugees from Lorraine and Hungary recognised the value of the minerals in the district, and formed an encampment on a tract of ground then lying waste, from which it took its name. These settlers acquired rights to freehold by residence, and 100 years ago they were recognised in Enclosure Acts. Hence the village grew irregularly, and it maintains its irregularity still. Its houses and erections seem of all styles and ages of architecture, from the

single-storied cottage, with dormer window projecting through the thatched roof, to the pretentious Unitarian chapel. The long and straggling street is a medley of dwellings, the cottages, with adjacent smithies, predominating. Gables are thrust in all directions. The builders have formed their own conclusions as to the probable width of the street, and thus groups of cottages, detached dwellings, and occasional inns are congregated at diverse distances from each other, whilst above, roofs of thatch, of slate, and of alab, gave variety to the colouring before doubtful dinginess settled upon all. The chief road winds through this long street, but the footpaths are unmade except by the frequent feet that have trodden tolerably smooth paths, whilst the open gutter forms the mode of drainage, and too often where the stable or a nail-shop impinges on the street, garbage dwells. Beyond the two chief streets there seem innumerable by-ways, — to detached forges, dwellings, and to adjacent hamlets. In short, on every hand irregular dwellings abound, usually with attendant nail or chain shops; and the traveller by these paths and the chief streets cannot keep from his ears the metallic ring of the hammer, with the deeper tones of the "oliver," any more than he can close his eyes to the fires that glow in the little forges, to the flames that ever and anon spring from some slight stack of chimneys, or to the sight of the men, women, and children who are engaged at the anvil, the machine, the forge, and the bellows. For in this Black Country all are "artificers in iron," like *Tabal Cain*. Male and female of all ages, almost, seem at work in the shops; and if the proportions recorded at the last census be still maintained, five females work in the nail and chain trades for every six men, whilst nearly a fourth of the whole of the recorded workpeople were under fifteen years of age, the females at tender ages preponderating! Here is a small nail-shed, with two young women at work. They are not uncommonly, though the arms, bared to near the shoulder, display strength of muscle and sinew that tells of long work, — with a very little exaggeration it might be said that they are "strong as iron bands." A handkerchief confines the long hair, and a dingy apron protects the cotton gown; and thus shielded, one is heating iron at the fire, pulling the bellows lustily, whilst the other is swinging the hammer on the hot rod, and now, deftly removing it, with a foot-treadle she brings into play the heavier "oliver." In another shed we have a woman older and broader built, with an attendant girl, — a child almost; in a third, a girl is working alone; and in a fourth, we have a young man; whilst further down the street there are apparently men and girls engaged in the same shop. In one a chain is slowly taking shape; there, heavy spikes lose their cherry-red colour as they are beaten heavily. But the chief of the productions seem to be gate and hurdle nails; though here and there a few shops are devoted to "Brazil" nails, and horse-nails give employment to not a few, but males only. Except for the variety of the work, and the difference in the disposition of the men and women, the scene is the same at scores, if not hundreds, of these nail-makers' huts, the work continuing far into the night. The village then loses some of its dinginess. Gas is liberally burnt; the open doors of many nail and chain shops allow glares of rosy light, or fitful gleams of paler hue, to fall on the dark pathway; and in the glowing interior, through red-lighted windows, young and old are seen at work, and a merry beating of a hundred anvils keeps up a tinkling chorus, whilst some of the less seemly aspects of the scene are veiled by darkness.

Around and about there are the wonderful haze and halo which transform the Black Country by night. On distant hill-sides the flames issue from the blast-furnaces; and from molten metal running thence, from the long bars that writh like burning snakes in the rolling-mills, and from the engine-houses of brickworks, there is a glow which lights up the country round and throws into relief tall chimneys with constant streamers of smoke, the whirling wheels of collieries, and now and then the diseased venting chimneys and the idle "gin" of coal-pits of olden date. The country-side is one continuous mine and metal-working centre, — the being almost continuous. In nearly all there is the same feature, — the small shop attached to the irregular-built dwellings with the chamber-windows opening outwards in the foreign fashion; the same prevalence of female labour, the same

independence of action on the part of the female workers, and often the same idleness and independence on the part of the men.

For this peculiarity of female labour in an unfeminine trade has its darker shades. The rate of wage is small, so small that the young woman working ten hours a day earns often not more than 6s. weekly; and thus it is that as the young grow old enough, — if only to blow the bellows, — they are set to work to add to the income of the family. Father, mother, and possibly three or four children, are all nail-makers; and by and by it happens that the growing lad or lass leaves the parental "hearth" literally, hires a "stall" in some shop, goes to the "fogger," — the warehouseman who supplies the rod-iron, and gets his or her supply, taking back in due time the manufactured article, from the smallest nail to the many-inched spike. This freedom of action minimises family life, and the earnings of the very young tend to develop that independence. Early marriages result, and when youthful husband and wife both work at the "hearth," when young children early go to the same employment, there can be little home comfort, and there is thus the more excuse for the occasional drunkenness of the man, ending at times in his becoming an idle loafer, lounging, coatless, at the public-house corner for a large part of the time, and subsisting practically on the earnings of his wife and children. Even darker shades of the picture are painted in some of the official reports of the Inspectors of Factories and Workshops; and not in regard to one village only, but in reference to the great bulk of the nail-making part of the Black Country, it may be said, in the words quoted in one of the recent reports, — "Do you call this a free country where women are employed in such trades as these?" Unquestionably what seems a benefit in providing employment for thousands in the district is an evil creating home discomfort and a strain of moral and physical evil; weakening, by too early and too prolonged employment, its youths, corrupting and degrading its age, and creating the strikes that seem chronic; and it will be well for the district when the fuller employment of machinery steadies the trade, banishes the "fogger," and sends women to more suitable work.

#### THE GLASS TRADE OF THE UNITED STATES.

An interesting report has just been published respecting the present condition of the American glass trade, one of those valuable instalments of industrial information which is the outcome of last year's census. It is difficult to over-rate the importance of these official statements, as advantage has been taken of the occasion to use a machinery of vast comprehensiveness and extent such as has been put motion by no other country. The present report is more than usually interesting, as it is the first inquiry that has yet been made concerning glass, the statistics of which have been till now exceedingly meagre. For the matter of that, indeed, it may be said that the trade itself has been meagre and of slow growth, although it is probably the first industry begun within the limits of the original thirteen colonies, for not many months after the settlement of the English at Jamestown, Virginia, in 1608, or thereabouts, the glass manufacture was started. Glass formed part of the first shipload of exports from that colony, and with the exception of a cargo of sassafras-root from Cape Cod, the first from America.

Considering the respectability of its age, it is somewhat singular that the trade has been of such slow growth, the plate-glass industry being almost a new one, and dating back but a decade, at which time there were only two plate-glass works in the whole of the States, one at Lennox, Massachusetts, and the other at Albany, Indiana. Neither of these two turned out much, and the consequence was that most of the plate-glass was imported. In the financial year ending June 30th, 1870, the imports were 1,428,246 square feet of cast polished plate, not silvered, valued at \$820,252. Ten years later, however, things had so far improved that the imports were only 686,694 square feet, valued at \$285,259, a decrease of about 52 per cent. in quantity, and 77 per cent. in price. At the present time there are six plate-glass factories, viz.: — Indiana, two; Massachusetts, two; Kentucky and Missouri, each one, representing a capital of \$2,587,000, having ten furnaces and 116 pots. The number of employes is 956; the annual wages

paid, \$292,253; and the value of the products, \$888,305. This does not include the value of cast plate in course of manufacture, nor of rough plate broken up and used as cullet, but the value of polished plate and that part of the rough plate which was sold. This branch of the trade is likely to be soon materially increased, as new works are being erected at Pittsburgh.

The number of factories making window-glass (including cylinder or sheet window), is 56, of which Pennsylvania monopolises 21, the others being in New Jersey 9, New York 9, Ohio 5, Maryland 4, Illinois 3, Indiana, Iowa, Massachusetts, Michigan, and Missouri, one each. The number of furnaces is 86; of pots, 747; the annual production being 1,864,734 boxes of 50 square feet, of the value of \$9,047,513. The capital represented by these factories is estimated at \$4,872,155, and the number of workers 3,890, the yearly wages being \$2,234,295. The glassware factories producing flint, lead, or lime glass (either blown or pressed), lamp-chimneys, druggists' ware, &c., are more numerous and on a larger scale. These are 82, of which Pennsylvania has 39, New York 15, Ohio 8, Massachusetts 6, New Jersey and West Virginia 2 each, Missouri 2, Connecticut, Columbia, Illinois, Iowa, Kentucky, and Maryland, one each. The number of furnaces is 154, of pots, 1,459; of employes, 12,387; while the capital is represented by \$7,189,278; the value of the products, \$9,586,020; and the wages, \$4,446,217.

Lastly come the green-glass factories, producing hollow ware, bottles, and green druggists' ware. Of these there are 50, viz.: — New Jersey 14, Pennsylvania 12, New York 9, Ohio and Kentucky 3 each, Illinois, Maryland, and Missouri 2 each, California, Indiana, and Massachusetts 1 each. The number of furnaces is given at 80; of pots, 493; producing a value of \$5,563,826, and employing 6,589 artisans. The following summary shows the comparative revenues of the total glass houses: —

	1880.	1870.
No. of establishments...	194	154
Employes .....	28,822	15,387
Capital .....	\$19,415,699	\$13,826,143
Wages paid .....	8,115,891	7,689,110
Materials used .....	7,991,303	5,994,356
Value of product .....	21,013,464	19,470,507

#### THE LEITH IMPROVEMENT SCHEME.

The Local Authority of Leith has taken the first steps for carrying out an improvement scheme under the Artisans' Dwellings Act, obtained through a provisional order granted during the Parliamentary session of 1880. When the proposal was mooted, four years ago, by Dr. Henderson, the provost of the town, there was a general agreement that something in the way of improvement was needed for the central area of the burgh, where the leading streets are very narrow and insanitary. The "closes," a great evil in Scotch towns, were crowded and unsavoury in the highest degree, and as the mortality returns of certain districts showed a most alarming rate of deaths from zymotic disease, the officials, under the instructions of the Town Council, included them in the scheduled area prepared under the Act. When the public was presented with the proposals the greatest indignation was expressed at the extent and costliness of the scheme, and although the authorities brought statistics from other towns, the growing objections to Sir Richard Cross's Act did not suffer any diminution. The plans were emphatically condemned at a public meeting, where resolutions were passed to the effect that while there was need for improvement, the town was not in a position to risk a probable expenditure of a quarter of a million of money. This decision somewhat affected the Council, and little was done until the Home Secretary wrote regarding the steps proposed to be taken. A modified scheme, excluding a number of most insanitary streets, was then prepared, only to be rejected. The third scheme was more acceptable to the public, and at all the ward-meetings of the burgh, resolutions were adopted approving generally of the plans, and urging economy in carrying them out. The fight in Parliament was a sharp but brief one. Mr. Cannanham, C.B., who had been

instructed by the Government, reported strongly in favour of the plans, adding some slight reservations as to interference with property. An objector appeared in person before the committee, but as his objections were more devoted to the working of the unfor-

fortunate Act than to the merits of the scheme, the committee sustained the contentions of the promoters, and recommended that the order should be given. A question afterwards arose as to the reading of a clause which entitled the Edinburgh Water Trust to receive a certain remuneration for the pipes affected by the scheme; but this point, critical as it seemed at one time, was amicably arranged between the objectors and Mr. T. B. Laing, deputy-town-clerk. When the order was passed the local authorities made a bargain with the officials that all surveying, valuing, and legal duties should be done at quarter-fees. This was thought a very handsome and satisfactory arrangement; but when the annual elections took place in November, some gentlemen, who were opposed to every scheme of improvement, obtained entrance to the council, and commenced a course of obstruction, the "house" being counted out after one gentleman had spoken three hours on a mere point of order. The main objection was taken to the payments made to the officials, some members holding that those in the receipt of yearly salaries were not entitled to receive extra payment for work done in the interest of the town, while others held that the arrangement as to quarter-fees was misleading, as proved by the accounts forwarded by the officials. An appeal was also made to the Court of Session by four members of the council, who found themselves with no other satisfaction than paying a sum of money for lawyers' charges. The majority in favour of improvement having prevailed, application for money was made to the Public Loan Commissioners, who gave a sum of 70,000*l.* at a higher rate than was expected. At a meeting last week the Council signed the necessary mortgages, and instructed the officials to carry out the preliminary steps of securing the property within the scheduled area. They had previously offered a premium for the laying out of the district, and already a large number of architects have sent in plans.

The area to be improved lies in the very centre of the town, ranging from Great Junction-street to the Coalhill and Shore. Yardheads, Giles-street, and St. Andrew-street are the principal thoroughfares running through the district, and it is proposed to widen these to a considerable extent. The main part of the scheme is a street running from Great Junction-street, at a point 200 yards westward of the important junction of Leith-walk, diagonally towards Coalhill, striking through Yardheads and the streets mentioned. It is proposed to make this leading street 50 ft. wide, and to convert the whole area adjoining it into building sites. At present goods conveyed in carts from the western end of the town go by way of Tolbooth Wynd and Kirkcaldy-street, and the narrow roadways. The street proposed will be about three-quarters of a mile in length, and will run from a point near the upper drawbridge. The "closes," which have been the despair of all sanitary reformers in the town, will be ruthlessly swept away, and when it is stated that some of them, having houses four stories in height, are only 8 ft. wide, any person will admit that a clearing away of the rookeries was imperative. In all, 3,000 persons will be dispossessed,—principally of the labouring classes. By the Act the local authorities are bound to supply accommodation to those removed from their houses. This accommodation will probably be supplied at the south-west end of the proposed street, where a large area formerly used as tanworks falls into possession of the burgh. Curiously enough, the first operations will be on the site of St. Anthony's Chapel, one of the most important ecclesiastical edifices in Scotland in pre-Reformation times. The ancient fortifications of the town ran round the extreme boundary of the scheduled area, and the "block-house" celebrated in the French defence of Leith, during the reign of Mary of Guise, was situated close by. The order also empowers the Town Council to remove other historic edifices, prominent amongst them being the Old Tolbooth, the old Parliament-square, with its strangely-decorated houses, and the handsome old building facing the harbour, known as the Council House of Mary of Guise. The Leith Public Library, also scheduled, will, it is expected, be saved from mutilation. The whole scheme is expected to entail a cost of 120,000*l.* The rate is not expected to exceed 3*d.* per pound yearly. Learning from others' faults, the Council have adopted the motto, *Festina lente*. Their investigations in London, Birmingham, and elsewhere, have convinced them that it is judicious

to proceed with clearing a small portion of the area at a time, in the hope that the whole work may be completed within the thirty years stipulated. The cost of securing the provisional order was 3,800*l.*, nearly 600*l.* having been spent in deputations and similar expenses. Mr. Beaton, burgh-surveyor, who is in receipt of a yearly salary, obtained the sum of 250*l.* for his services in connexion with the various schemes. A curious legal point sprang up when his account was considered, some members holding that the terms of the Artisans' Dwellings Act did not allow payment for work done in the prosecution of an abortive scheme. Legal opinion of the highest kind was taken, with the result that payment of all the sum demanded was made. Operations for clearing the first portion of the area will be commenced at an early date.

#### LATEST MODE OF RESTORATION.

GOETHE required an edifice to be so perfectly beautiful that even a blind man shall perceive and appreciate its beauty. It sounds absurd. But a moment's reflection tells us that it applies to highest symmetry of internal arrangement, and the demand, therefore, is by no means so unreasonably as at first sight appears. The dictum is characteristic of Goethe, who worshipped order, and preferred the Romans to the Greeks, asserting that he had himself lived on earth before in the time of Hadrian. But in Heidelberg a novel application has lately been made of the Goethean dictum.

Heidelberg has its university, and among the German universities, some twenty in number, competition, polite but covetous, furious and jealous, prevails. Each seeks to gain the most illustrious lights of learning, and outshine its brethren, and the students, of course, flock round the greatest names. Fame and fashion, no doubt, play here as great a part as real teaching and learning power, but money certainly the chief. The higher the emoluments attached to a chair, the more learned its occupant, the larger the number of students, and the grander, more renowned, and in every way more illustrious, the university. And as each university draws its revenues from the one or the other State, the rivalry extends to the various governments, each fostering its high school, financially, to the utmost of its ability. And, of course, the citizens of the university town are equally interested in the matter, for the money, after paying for all the wisdom of Germany, eventually, one way or the other, finds its way into their pockets. Heidelberg, for example, not being a manufacturing town, is largely dependent for its prosperity upon the university with its students and foreign visitors. So much is this the case, that the town has just erected barracks, bought a large exercising-ground and rifle-range, and made a present of the whole to the Government, in order to obtain a garrison. And it pays. It is a method of rendering the huge German army useful to at least some people. Then there are the professors, the most abused and ridiculed race under the sun, especially in former times in Germany. With Professor Teufelsdrückh and Hofrath Heuschrecke, most illustrious specimens of the order, may fairly be compared Professor Kopfer, who some years ago astonished the German world with the discovery of the "Trinity of the Devil," as if to every reasonable mind unity in this respect was not sufficient, and even more than sufficient. Professor K. was a man of extraordinary erudition, but his idea has not been universally accepted. German professors, as a class, deserve our highest respect; and especially courteous are they to foreign students. But they are indeed human, and between themselves as much, or even more, jealousy prevails than among certain learned colleges and societies at home. Each wants to burn his own candle most bravely. But surrounded by a hundred or a thousand other torches, all flickering, flaring, and spluttering to utmost individual ability, how, in such a blaze of light, shall his shine with due, that is, pre-eminent, glory? Extinguish them all! There is some use in darkness. So all the rest ought to be extinguished in order that his beam alone amidst the universal gloom. But this not being possible, one university must wholly outshine the rest. It is the first duty and object of a German university to reduce all the others to comparative obscurity. The reader will now be fully able to appreciate an event,—a calamity,—that has thrown the whole

world into consternation,—that is, in this small part of the world,—Government people, professors, learned and unlearned.

Heidelberg has its library, the famous Bibliotheca Palatina, rich in precious manuscripts. And this ever since last summer has been undergoing a process of restoration, including, amongst other things, the construction of a fire-proof chamber. An excellent idea. We remember with sorrow the fire at the Midland Institute in Birmingham, and wish with all our heart every great library had its fire-proof chamber. Well, the restoration, at considerable cost, was completed, or at least supposed to be so, and the library again thrown open daily. Readers who had long been restricted in their attendance again rejoiced. But not for long. In less than a fortnight the library is again closed. To universal astonishment, it is declared to be *baufällig*, ruinous, decayed, crumbling down. And this after architects and builders had been at work at it for six months!

A commission is instantly summoned to search and examine, and pronounce it to be in such a dangerous condition as not to be entered without risk of life. The restoration is declared to be finished. It is perfect, complete, and nothing remains to be done but to take down the edifice and erect a new one at the cost of a million of marks. Meanwhile the 200,000 volumes are to be fished up out of the ruins and put away somewhere for an indefinite period. The Government of the little state, having no money, are aghast, the burghers are aghast, for all the students will leave, and the professors are,—unanimous. And, most distressing, it is nobody's fault; not in the least, so there is no consolation at all. The builder has only fulfilled his orders, and his work is irreproachable. But the architect? Well, what architect can possibly be responsible for ancient foundations? He did not lay them. And after the lapse of centuries who shall venture to say what weight they will or will not support? One must try. Who shall say what our poor relations in hopes of a legacy, or an elderly dame who thinks herself charming, will or will not stand? Try, indeed! Foundations, dear my lord, foundations! it is a chapter profounder than the wit and wisdom of man has ever yet penetrated. What, indeed, the Baden Landtag, who will have to vote the money for a new edifice, may say on the subject, matters very little. The restoration of the Bibliotheca Palatina has been fundamentally accomplished. And only the moral remains, that, though new houses really need no foundations whatever, or mere supporting, if only disposed of in time, those of ancient edifices must be thoroughly examined before restorations! Which, of course, is perfectly practicable.

#### CEMETERY SCULPTURE IN ITALY.

THE Camposanti of Italy have always been visited for the beauty of the funeral monuments they contain, and in the erection of which art has been greatly assisted by filial and loyal piety. But in bearing this testimony to this characteristic bent of the Italian mind, it must not be forgotten that the rearing of such monuments there is greatly facilitated by very fortunate climatic conditions. The sunny climate of Italy favours the employment of marble and other material of delicate texture, while our atmospheric surroundings compel us to confine ourselves to materials of a more homely and substantial nature. Hence the absence in England of sumptuous monuments such as we see in the cemeteries of the South. In our present issue we give illustrations of monuments from two of the Camposanti of the North of Italy.

#### THE CAMPOSANTO OF GENOVA.

From amongst the many monuments in the Camposanto of Genoa, we select that erected in honour of Sig. Noceti, a wealthy Genoese merchant, who died about four years ago without leaving any near relations. He bequeathed the whole of his fortune to the Infant Asylum of Genoa and other philanthropic institutions of the city, with the only proviso demanding a record of the gift to his memory. His executors thought that no more fitting tribute could be paid to the testator than by erecting the simple yet impressive monument of which we give a view. The work is in marble and bronze. Over

the bust, which is of colossal proportions, leans the Genius of Benevolence, who places a wreath upon the forehead. The monument was designed and executed by the sculptor Pietro Costa.

#### THE CAMPOSANTO OF TURIN.

The funeral monument which was raised in the Camposanto of Turin in honour of the Cavaliere Carlo Sada, the accomplished architect, who died in 1873, and of part of which we give a view, was the work of the eminent sculptor Giulio Monteverde, and was raised in 1877.

The late Cavaliere Sada was the architect of the Casa Reale, and of the theatre of Alessandria, the cemetery of Savona, and the church of San Massimo in Turin, in the Camposanto of which his ashes rest. The monument erected to his memory has a height of nearly 20 ft. from the base, the statue being about a third larger than life-size, and consists of an ample sarcophagus raised upon a base. About the sarcophagus are scattered various architectural objects, amongst them a fragment of a cornice and an overthrown capital, which serve as a support to the figure of Sada. Upon the sarcophagus is seated a representation of Architecture,—a figure of a young girl, her head crowned with a wreath of oak-leaves, and her sad look cast down upon the statuary below her. We give an illustration of this figure, which is noticeable in respect both of conception and execution.

#### HOSPITAL FOR THE SICK POOR OF THE PARISH OF ST. MARYLEBONE.

This building, which is to be opened by their Royal Highnesses the Prince and Princess of Wales, on the 29th, has been erected for the accommodation of 74½ sick poor of the parish of St. Marylebone.

The foundation-stone was laid July 7th, 1879, by Mr. Edmund Bonhois, M.A., J.P., chairman of the St. Marylebone Board of Guardians.

The building has been designed, and its erection superintended, by the guardians' architects, Messrs. H. Saxon Snell & Son. The builders are Messrs. Wall Brothers, and the sub-contractors for sanitary, heating, cooking, and gas works, and the machinery and furnaces, are Messrs. Benham & Sons, Bradford & Co., Bold- ing & Sons, and Mr. Edward Howard.

The contracts for the whole of the works, including sanitary appliances, fittings and fixtures of every description, and gas, water, and blinds, amount to nearly 113,000*l.*, or about 150*l.* per bed.

The following description of the building, of which we publish a view, is founded on a report prepared by the architects. Detailed particulars, with plans and views of the building, are given in a work written by Mr. H. Saxon Snell, and published by Messrs. Batsford, of High Holborn, which will have our attention in due course.

**General Arrangement.**—The general arrangement comprises, first, a block of buildings situated at the entrance, and containing the residences of the medical officer, matron, and assistant medical officer; and over the arched carriageway in the centre there is a chapel capable of accommodating about 180 people. Immediately opposite this entrance-gateway is a block of building standing centrally on the site, and containing all the administrative offices; and at the rear are the engineers' shops and the furnace and boiler rooms, adjacent to which is a large tower with a furnace-shaft in the centre, round which winds a staircase leading to the laundry, washhouse, and drying-ground situated on the upper stories. The mortuary and engineers' house are situated to the right and left of this rear building. The entrance-hall and reception-wards for both sexes are situated in front of the administrative offices, and from this portion of the building, running right and left, are two corridors, 10 ft. wide, leading on either side to two double pavilions for the reception of male and female sick respectively. All these double pavilions are three stories in height, are similarly arranged, and consist of two wards, each 84 ft. long, 24 ft. wide, and 13 ft. high, with bathroom, water-closets, and lavatories leading out of them at the extreme ends, but cut off, as it were, by a narrow lobby having windows for cross ventilation on either side. All these offices will be kept warmest to a higher temperature than that of the wards, not only with

a view to the better comfort of the patients, but to induce a current of air from the ward through the ventilated lobbies rather than in a contrary direction. In the central portion of these pavilion buildings there is on each floor a day-room for the patients, two nurses' duty rooms, and three small wards for the separation of special cases, also the staircase, both the steps and landings of which are supported by brickwork vaulting, thus rendering those parts of the building fireproof. The well-rooms round which the stairs wind are enclosed by brick walls, and contain the hydraulic lifts which ascend from the ground to the upper floors. These lifts are not worked by chains, but by hollow iron rams which descend into wells to a depth corresponding to the height through which the cages are capable of being lifted.

**Ventilation.**—The ventilation of the wards is effected by natural means, and is dependent, therefore, upon the very simple and well-known fact, that (*ceteris paribus*) heated air will always rise to a point higher than that of the colder air surrounding it, and that in its passage it will carry with it noxious gases and other deleterious matter which would otherwise, by reason of their greater density, remain stationary or descend to the floor-level. If any pair of beds be moved forward into the room it will be seen that next the wall there is a skirting-box, with a panelled front, and that the panels immediately under the heads of the beds are formed of perforated zinc. This box is easily lifted out from its position, for the purpose of cleaning; but when in its place it covers an aperture in the floor, from which a ventilating-pipe descends in a slanting direction to the outside of the wall, and through this pipe the external fresh air is admitted, first into the skirting-box, and then out of it through the perforated zinc panels (situated under the heads of the beds) into the room. Looking upwards it will be found that the ceiling, directly over each pair of beds, has a perforated zinc panel running the whole width of the ward, and on lifting up a portion of this panel next the wall it will be seen that the perforated zinc covers a channel the full depth (12 in.) of the floor, and that this channel communicates with a large shaft running up the wall, like an ordinary chimney-flue. In the case of the top floors the arrangements are similar; but the air-channel runs horizontally down the centre of the ward. Now, returning to the skirting-box, it will be obvious that a greater part of the fresh air passing into the room through the perforated front of this box, and immediately under the head of the bed, would be drawn upwards, and passing through the perforated zinc of the ceiling panel, be conveyed through the upright flue, and find an exit at its termination, and it is contended that the air in thus passing upwards from the skirting-box to the ceiling must encircle, as it were, the space surrounding the bed of the sick patient, and carry away with it such emanations as there may be. The general ventilation of the wards is supplemented by the central stoves, hereafter described, and also by up-cast shafts in the side-walls.

**Warming.**—The fire-grates standing in the centre of the wards are the invention of the architect. They consist of an open fire at front and back, and the flues from them descend and pass right and left under the floors to the outer walls, in which they are continued to the chimney-shafts above the roof. The novelty of their construction, however, consists of the sides, back, and top of the fires being surrounded by a wrought-iron casing, containing water, and that at the sides of the stoves there are two upright coils of pipes, through which this water, when heated by the fires, circulates. Thus the whole products of combustion are utilised for heating purposes, and it will be seen that as the water cannot attain a temperature higher than 212° Fahr., the iron over which the air passes cannot be so heated as to burn the air impinging against its surface. Another advantage offered by this plan of heating is that a vase on the top of the stove contains the water rising from the lower part, when it is expanded by the heat of the fire, and that this water being warmed a slight vapour arises from the vase, which serves to moisten the air of the wards. It should not be forgotten also to add that a channel runs under the floor to each side wall and communicates with the outer air, thus forming a passage way for fresh air to pass from the outside round the stove and the heated coils of pipes into the room. Stoves with descending flues are generally found to smoke when the

flue gets cold through the fires being neglected or from their being let out during the night, but this difficulty has been combated by enclosing the horizontal iron flue-pipes in sand as they pass through the floor. The sand retains the heat of the flue for many hours, and it is only once therefore it is supposed, if at all, and then at the beginning of the winter, that the flue will require "piloting."\*

**Lighting.**—The whole of the building is lighted by gas, and the burners in the wards are placed under inverted enamelled iron basins, from the upper part of which pipes, 3 inches in diameter, are carried along the ventilating ceiling channels into upright flues in the side walls, with the view of carrying off the products of combustion.

**Water Supply.**—The water for the general use of the establishment will be supplied by an artesian well, but a connexion is made with the mains of the Grand Junction Water Works Company, which can thus be made available in case of fire or during the necessary periodical stoppage of the well-pumps during repair. The upper part of the large main tower contains cisterns for the storage of from two to three days' supply. This tower also forms a chimney-shaft for conveying away the smoke from the furnaces of the steam boilers, cooking apparatus, &c. Fire-mains are carried through every part of the building, and hydrants are placed on each landing of the staircases of the pavilion wards, and also at various other parts of the building.

**Drainage.**—The drainage of the building is effected by means of glazed earthenware socketed pipes, laid to a fall of not less than 1 in. to 10 ft., and carried into the newly-constructed sewer running down the centre of the road-way fronting the building.

The number of sick for which accommodation is provided is 74½. Super. feet of site per head, about 188; super. feet of covered buildings per head, about 82.

Estimated number of resident officers and servants, 53; ditto, ditto, of non-resident officers, including washer-women, scrubbers, &c., 47.

Number of sick and resident officers taken together, 802. Super. feet of site per head, about 175; super. feet of covered buildings per head, about 75.

The number of sick in the large wards is 28, the superficial space being 72 ft., and the cubical space 936 ft. per head. Each separation ward is designed for two patients, the space per head being 100 ft. super. and 1,300 cubic feet.

Area of site, 140,280 super. feet=3 acres 35 perches=3¼ acres nearly.

Area covered by buildings, 60,521 super. feet =1 acre 1 rood 22 perches=three-sevenths of the whole site.

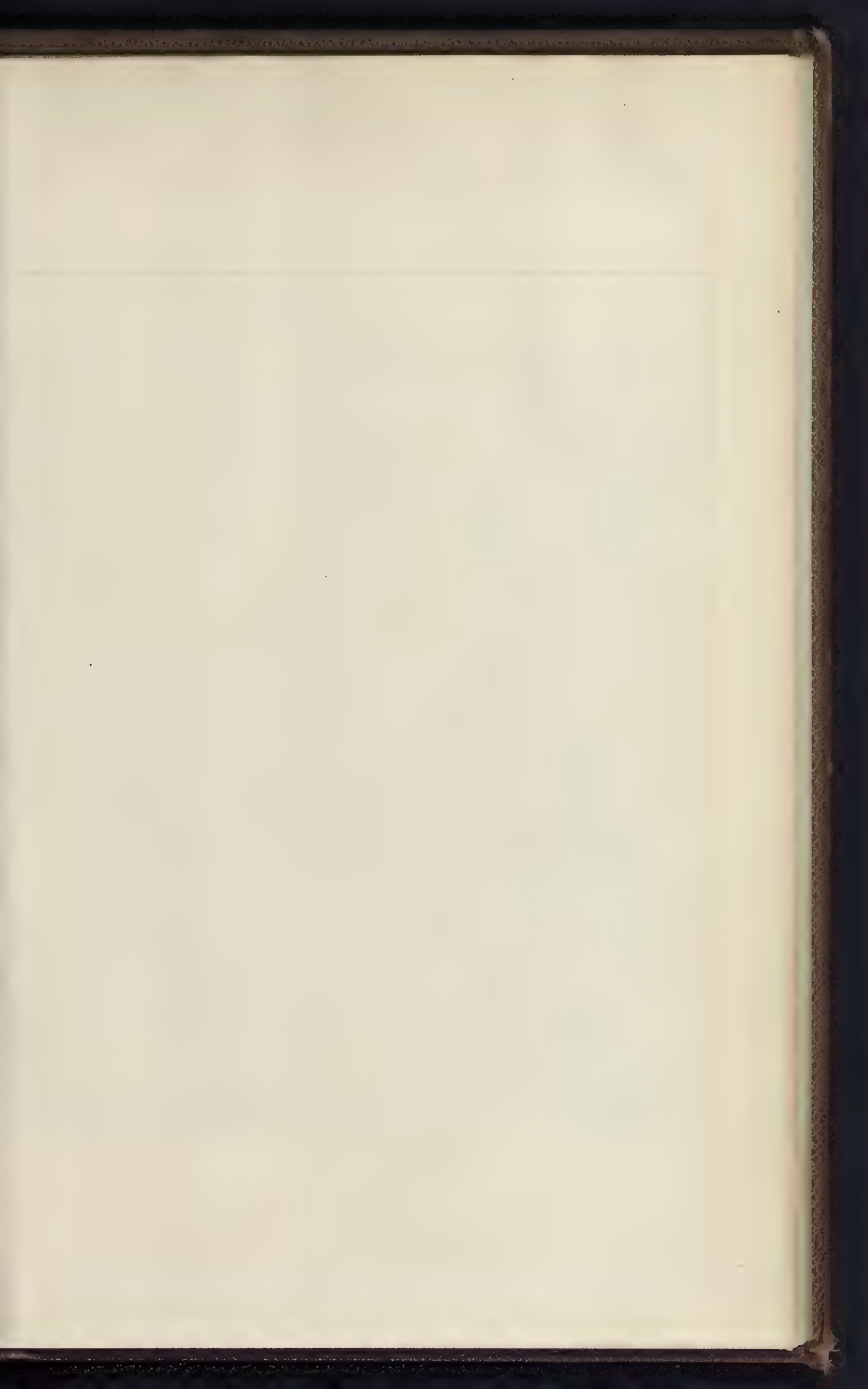
Area of gardens, yards, &c., 79,759 super. feet =1 acre 3 rods 14 perches=about four-sevenths of the whole site.

#### RESTORATIONS AT THE ROYAL EXCHANGE.

CONSIDERABLE repairs are found to be necessary at the Royal Exchange, the carrying out of which has been entrusted to Messrs. W. Cubitt & Co. Scaffolding has been erected at the Threadneedle-street and Cornhill frontages, as well as in front of the elevations inside the open area, at all of which the work of restoration is now proceeding. At several points on the respective frontages, both as regards the main face of the elevations and the columns, capitals, and cornices, the stonework which has been found to be decaying is in course of removal, and is being replaced by new blocks. We understand that the covering in of the area of the Exchange, which has been urged upon the Exchange authorities by a number of City merchants, is now under consideration, and that there is some probability of its being ultimately carried out.

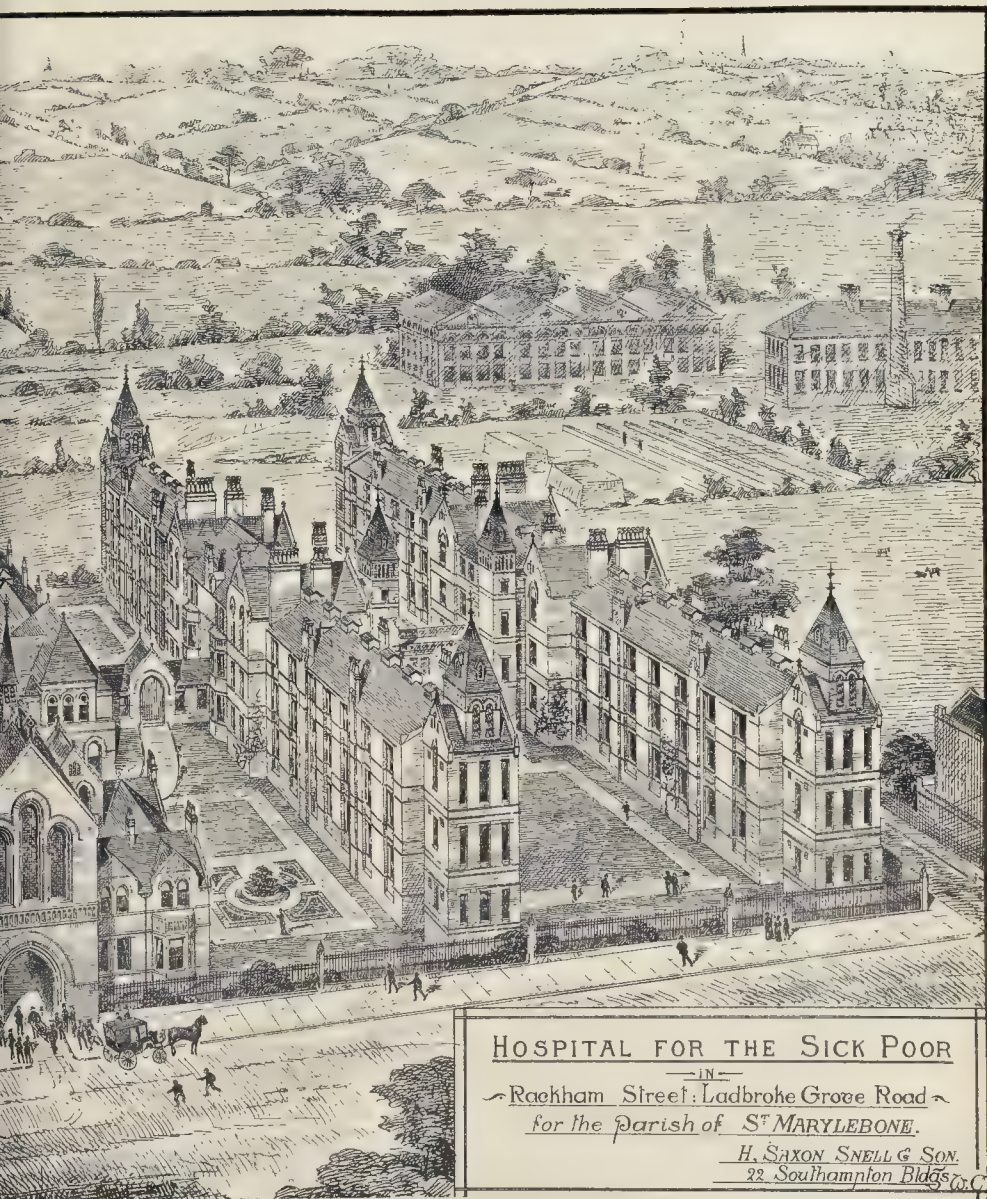
**Stationers' Hall Court.**—The Bookseller says that the lofty plane-tree which stands in the little enclosure beside Stationers' Hall is doomed to destruction, owing to the necessity for throwing back some of the adjacent houses in order to widen Amen-corner and Ave Maria-lane. The tree is stated to have been planted only seventy years ago.

\* These fire-places, known by the name of "Thermohydric Grates," are manufactured by Messrs. Potter & Sons, South Molton-street.





Antiquities of the City of London, 1796, High Holborn.



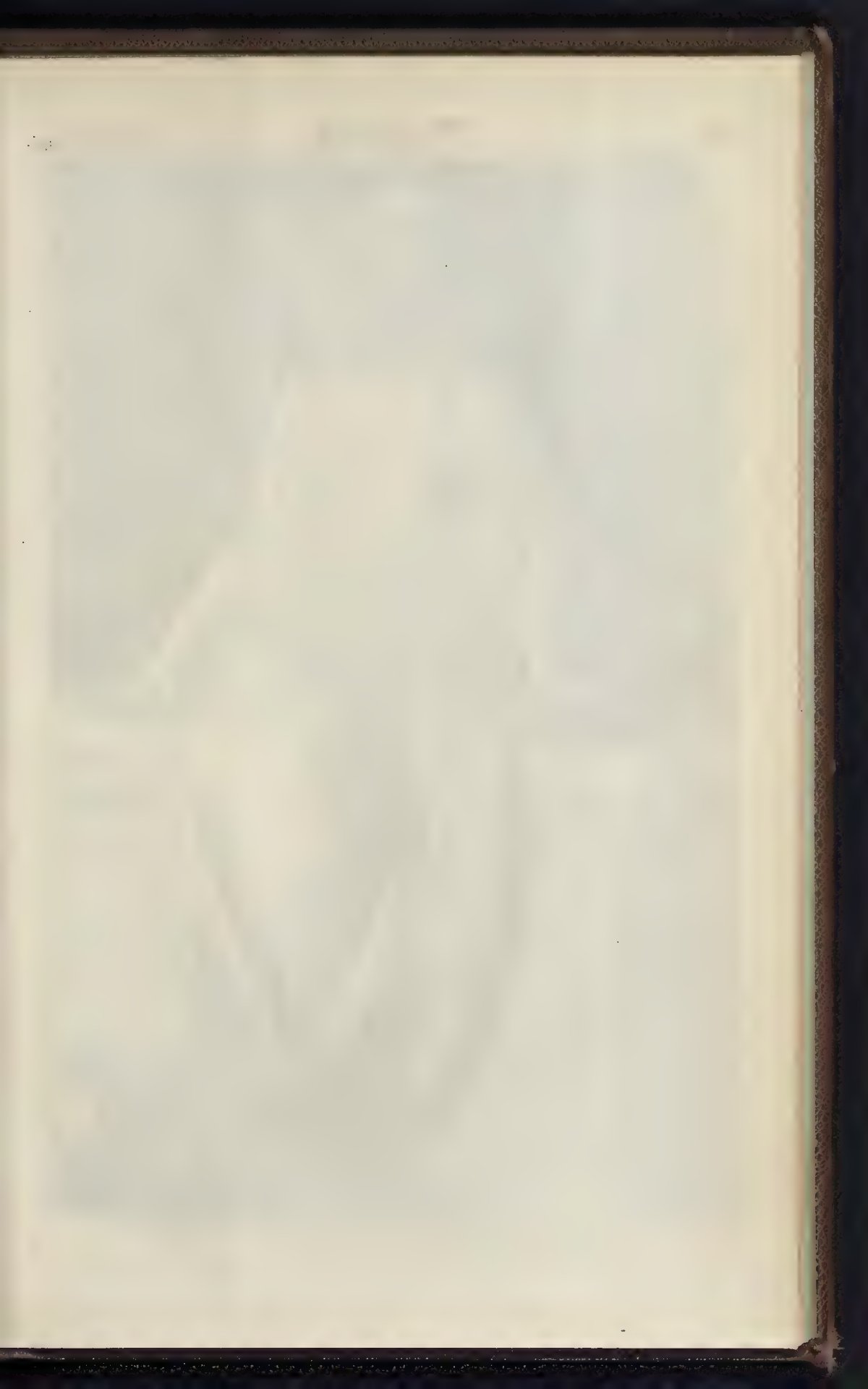
HOSPITAL FOR THE SICK POOR

—IN—  
Rackham Street: Ladbrooke Grove Road  
for the Parish of ST MARYLEBONE.

H. SAXON SNELL & SON.  
22 Southampton Bldgs.

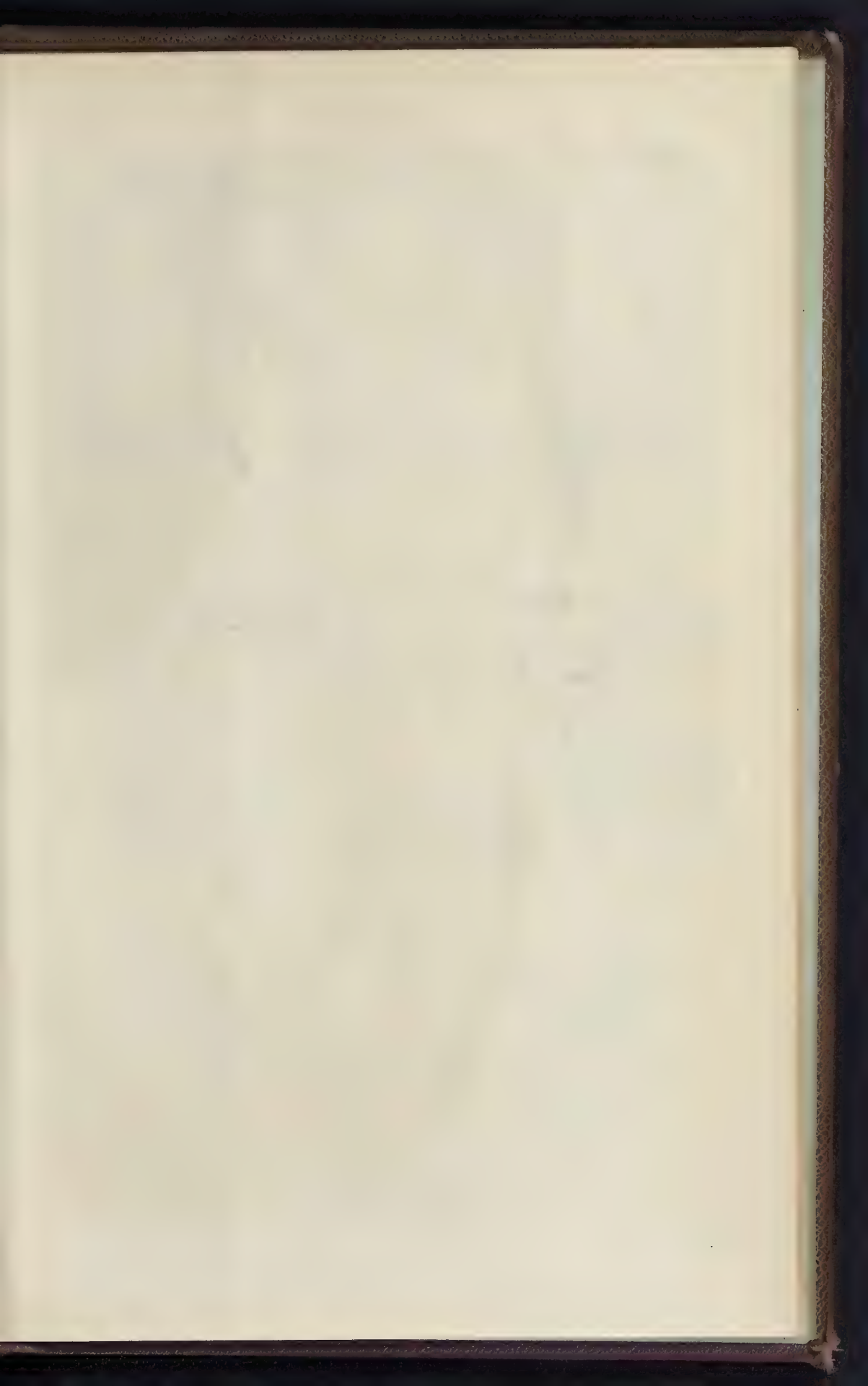
Wyman & Sons Printers, Old Green St.

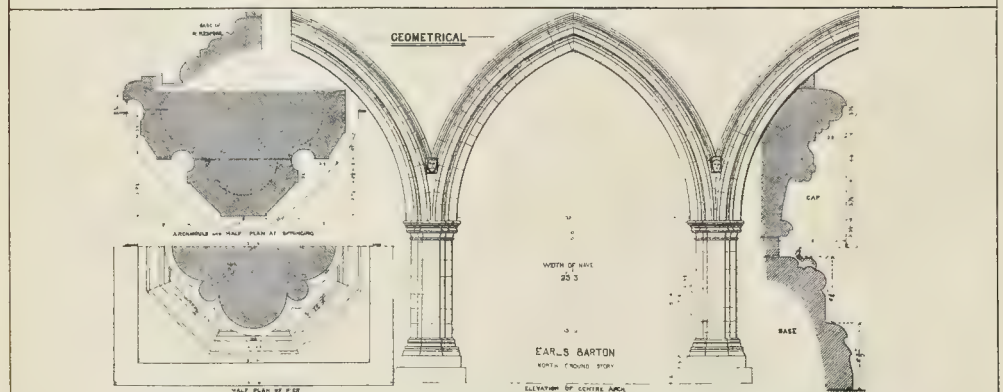
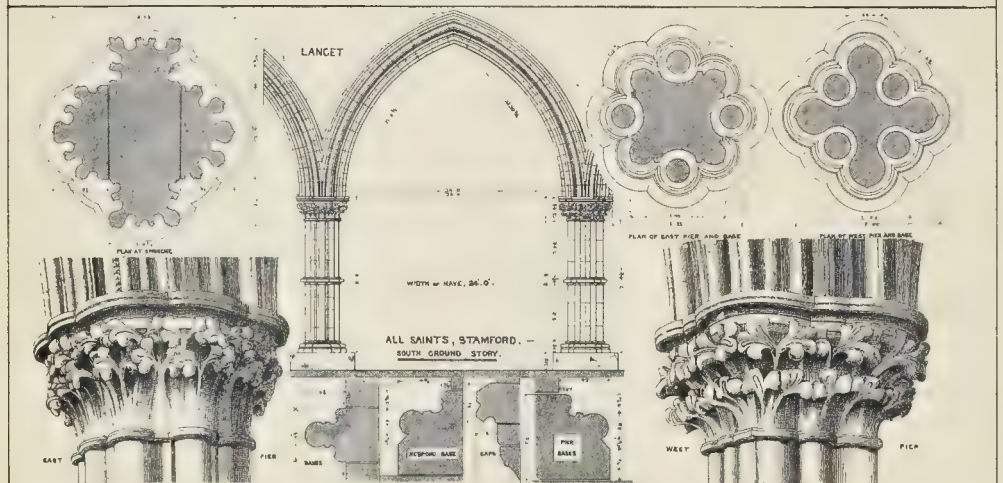
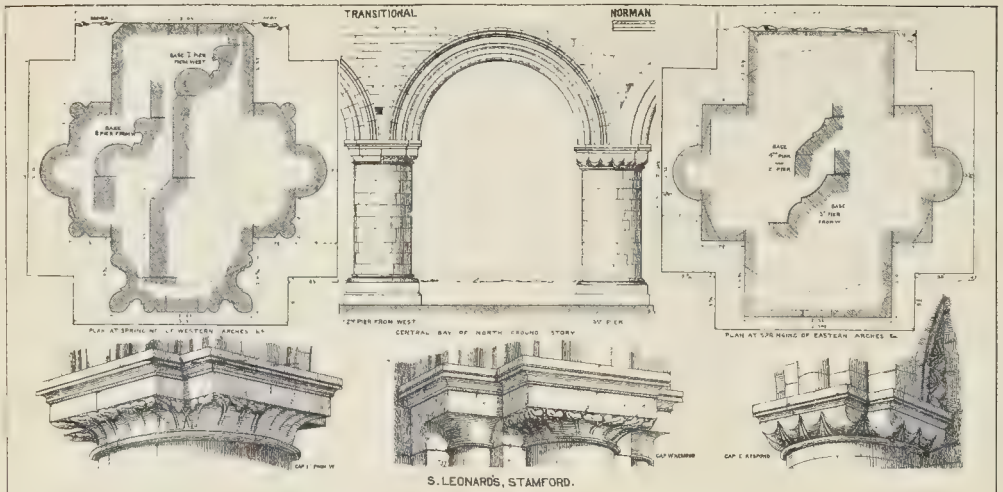






CEMETERY SCULPTURE IN ITALY: FIGURE OF ARCHITECTURE FROM THE MONUMENT TO THE CAVALIERE SADA, ARCHITECT, TURIN.—SIGNOR GIULIO MONTEVARDE, SCULPTOR.

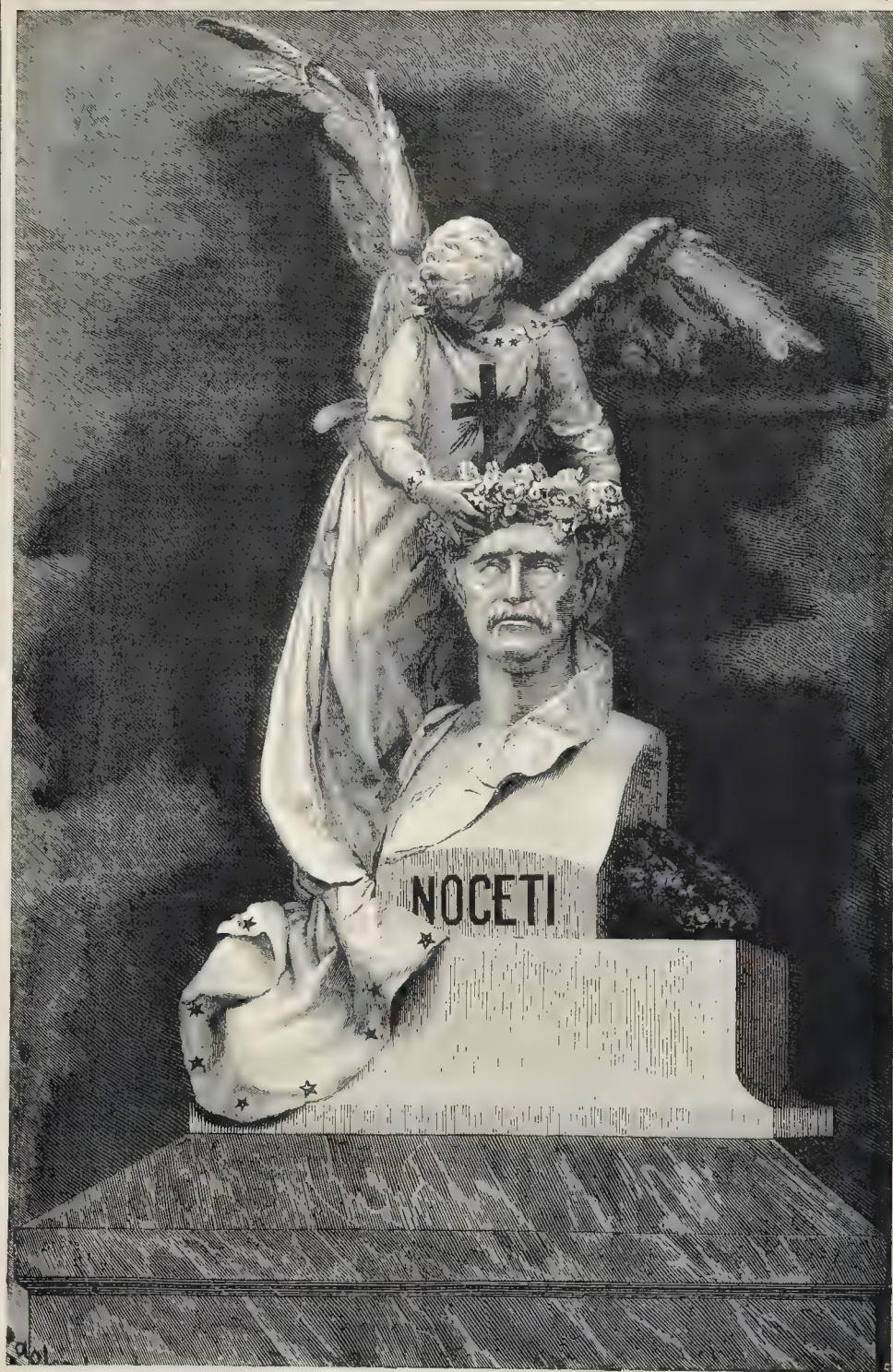




† FROM "CHURCHES OF THE NENE VALLEY", NORTHAMPTONSHIRE, † BY MESSRS J. JOHNSON & A. H. KERSEY, ARCHITECTS. †  
(Reduced by Photo-Lithography.)







CEMETERY SCULPTURE IN ITALY: THE NOCETI MONUMENT, GENOA.  
SIGNOR PIETRO COSTA, SCULPTOR.



## LANCING COLLEGE, SUSSEX.

On Wednesday, the 15th inst., the Provost and Fellows of Lancing College gave invitations to friends to meet the Bishop of Chichester, the Visitor, at the dedication of the new schoolroom and class-rooms, erected at the cost of Mr. H. M. Gibbs, of Tyntesfield, an old "Lancing Boy," and now a Fellow of the Society. Persons present were further asked to see for themselves the progress which has lately been made with the great chapel and other buildings which have for some years been in progress.

In planning the new schoolroom and its class-rooms, the object aimed at has been to combine a great room for assembling the school and for examinations with a set of class-rooms in connexion with the schoolroom, so that all may be under the eye and immediate superintendence of the head-master. The great schoolroom is placed on the ground-floor of the upper quadrangle, the southern gable being in the centre of its northern side, while the mass of the school buildings extends northwards beyond the block of side buildings of the quadrangle. The room is 110 ft. long by 33 ft. wide; it is open to the roof; the height to the wall-plate is 22 ft. 6 in., and to the apex 45 ft. On each side of it are six class-rooms, of which ten are 20 ft. 6 in. by 16 ft. 3 in., and the remaining two are 25 ft. by 19 ft. The style of architecture is Decorated, and in harmony with the rest of the college buildings; the open roof follows the style of that at Fenchurch Place, in Kent, one of the most beautiful specimens of domestic architecture of the Decorated period. The room is lighted by large three-light windows on each side, rising up into the roof, with tracery heads; the eaves of these windows are 17 ft. above the floor, and so arranged as to come between the gabled roofs of the class-rooms below. The entrance is at the southern end by an octagonal porch attached to the cloister round the quadrangle. This porch has open arches, with buttresses at the angles, and over it is an upper story opening by a wide arch into the gallery in the schoolroom; each side has a richly-tracery window, and over these is a pyramidal roof covered with oak shingles, which rises in front of the great southern gable of the schoolroom. The class-rooms have gabled roofs facing east and west respectively. Below the eastern class-rooms is a series of music-rooms, opening into a narrow cloister, the pointed arches of which support the class-room walls above. This forms the side of a small quadrangle, which will be hereafter completed; it is reached by a large turret-staircase down from the level of the upper quadrangle, and these stairs are carried up two stories higher than the quadrangle to reach sets of masters' rooms on these upper floors.

The school-room walls are faced externally with flints and stone, and lined internally with Sussex sandstone and with panelling of English oak; this panelling is 14 ft. high, except at the northern end, where it rises to a height of 22 ft. At the southern end the panelling returns across as a front to the gallery, forming also an inner lobby with swing-doors to the entrance. Over the head-master's seat, on the dais at the northern end, under carved canopies, are figures of the Virgin Mary and St. Nicolas, with the college motto, "*Qui diligit Deum diligit et fratrem suum*," and the arms of the college will be carved on the shield between the figures. These are executed by Messrs. Farmer & Brindley, of London. The windows are glazed with cathedral glass, in varied designs, and the floor is laid with solid oak blocks, arranged in patterns. The class-rooms are entered from the school-room by curtailed doorways. They are lined with oak boarding, and have similar flooring to the school-room. There are sets of desks and forms on the dais for the head-master's class, and a series of blocks of seats and desks down each side of the school-room, while in the class-rooms the desks are arranged round the walls on three sides, facing the master, excepting the two larger mathematical rooms, where they are arranged across. All are of oak, and are executed by Mr. Foster, of Kempston, and Mr. Shearburn, of Dorking. The school-room is lighted by pendant brackets of bronze, of six lights each, and each of the class-rooms by a bronze pendant of three lights. These are executed by Messrs. Singer & Sons, of Frome. The heating is partly by pipes underground, in addition to coils of pipes placed against the walls. The cost has been upwards of 15,000*l.*

The Chapel.—A great part of the outer walls

is now over 45 ft. above the floor of the choir, making the total height at the eastern end from the bottom of the foundations some 120 ft., bearing in mind that below the choir-floor there is the crypt, nearly 20 ft. high, with foundations some 60 ft. under it, resting on the solid chalk. The walls of the chapel proper are at present built for about half their thickness. They are faced with Sussex sandstone, as the inner walls and pillars will be. The southern windows fixed are those of the south aisle and base of the south-eastern tower, with the corresponding windows of the north aisle and north-eastern tower. The apse has plain unpierced walls, until the triforium stage is reached. Of this stage there are now fixed the bases and sills of the windows. At the springing line of these small windows, the inner wall will be attached, and both carried up together in the clearstory stage, with the buttresses and flying buttresses over the aisles. The inside length of the chapel (exclusive of the ante-chapel) is 178 ft. 6 in., and is divided into ten bays, inclusive of the towers at the east end of the aisles; the apse has five bays beyond. The total width is 64 ft., of which the choir is 34 ft. The ante-chapel will have aisles as the chapel, and on the north side of it, and opening into it, will be the great tower, 250 ft. in height. The great doorway will be in the south wall of the ante-chapel, and there will also be an entrance through a cloister under the common room and the ante-hall. The design is in the Geometrical Decorated style. The windows in the aisles are of three lights, and in towers of two lights, with cusped circles in the heads. The great clearstory windows will have four lights, excepting in the apse, where there will be two-light windows. The triforium gallery will be continued all round the building, and by a passage in the thickness of the wall round the apse. At the west end there will be a double triforium over the cloister, with a fireproof munition-room. The total height of the bosses of the vaulting from the choir-floor will be 91 ft., out of which the arcades are 44 ft. high, with a triforium 10 ft. above.

All the works of the school and chapel have been carried out (except those specially mentioned) by the college workmen, from the designs and under the superintendence of Mr. R. Herbert Carpenter and Mr. Benjamin Ingelow, of London, the college architects, and under the constant supervision of Mr. W. B. Woodard, Fellow and Custos of the College, Mr. Knight being the clerk of the works.

The society is proceeding with other works in addition to those at Lancing. At Ardingly College the Lower Middle-class school for the South, new dormitories and masters' rooms have been built, and the chapel is nearly completed, the central tower being carried up to the roof ridges. At Ellesmere, in Salop, a school for 500 boys of similar grade to that at Ardingly, there is in course of erection a block of dormitories and masters' rooms, the hall, ante-hall, and offices. At Denstone, a Middle-class school for the Midland counties, the chapel is being added to the completed school buildings; and at Abbots Bromley, near Rugeley, dormitories have been built for the Middle-class girls' school, and the chapel with its ante-chapel is now on the eve of completion. All are being carried out under the college architects, Messrs. Carpenter & Ingelow.

## LINCOLN DIOCESAN ARCHITECTURAL SOCIETY.

The annual meeting of this Society was held at Sleaford last week.

The Parish Church, which is dedicated to St. Denis, was visited on the first day (Wednesday) and described by Mr. Charles Kirk, M.A., architect. From a manuscript found in the parish chest it appears that the church was built in the year 1271, by Roger Blount and Roger Brickham, of Sleaford, merchants. Some years ago it underwent a complete restoration, under the direction of Messrs. Kirk & Parry, at a cost of nearly 3,500*l.* Taken as a whole, the church is remarkable for the beauty and variety of its Decorated window tracery and the excellence of its mouldings. The plan comprises a nave, with a double north aisle (of which the northernmost is modern, retaining the original windows); a south aisle, north and south transepts, chancel, west tower and spire, and south porch. The western facade is a somewhat confused composition, but with its richly-carved parapets, curious central bell-cotes, exquisite angle pin-

nacles, well-designed doorways, and enriched niches, is one of much stateliness. The lower part of the tower, with its flanking arches, is Transitional. It has a Perpendicular west window and stone vaulting within. The upper stage is Early English. The broach spire, which rises to a height of 144 ft., belongs to the same style, of which, though stunted in outline, it is a very good and valuable example. The large and lofty nave, with the aisle and transepts, is entirely Curvilinear Decorated. The elevation of the south aisle is of remarkable beauty. The tracery of windows generally is of great variety and value. The large six-light north window of the transept was regarded by the late Mr. Edmund Sharpe as one of the finest in its style in the kingdom, ranking the fourth in order, and only surpassed by the east windows of Carlisle Cathedral, Selby Abbey, and Heckington Church. The nave clearstory is a Perpendicular addition of much richness. The water-table bears the inscription, "Hore lyeth William Harebeater and Elizabeth his wife. Crysst Jhu graunte us everlastyng life." The chancel is Perpendicular; good, but not of the interest of the nave. It has a roof-screen of much interest, pronounced by Pugin to be one of the most perfect in England, with a double roof-scar. At the west end of the north aisle, a buttressing arch, resembling those of the crossing of Wells Cathedral, is an interesting feature. The monuments of the Carr family (now represented by the Marquis of Bristol), though late, deserve attention. One of them has much mutilated recumbent effigies of Sir Edward Carr, Kt., and one of his wives. The pleasing appearance of the interior of the church and the excellent state in which the fabric is kept were greatly admired by the members of the society and visitors.

After the church had been described by Mr. Kirk, some of the company availed themselves of a brief interval which was afforded for viewing the town and the site of the Castle, of which nothing remains except the ditches, earthworks, the mounds and hollows of its uprooted foundations, and a fragment of the north-east tower. The manor of Sleaford was granted by the Conqueror to Remigius, on the removal of the see from Dorchester to Lincoln. The first castle was erected by "Alexander the Magnificent," c. 1130, at the same time with the castles of Newark and Banbury.

Carriage excursions were made to Asgarby (the church of which place was restored in 1870), Great Hale, Howell, South Kyme, Anwick, Ewerby, and Kirkby Laythorpe, in which villages the churches and other buildings of interest were examined. (A detailed report is given in the *Lincolnshire Chronicle* for the 17th inst.)

On the second day (Thursday) there was an excursion to the following villages, viz.:—Quarington, Silk Willoughby, Swarby, Aunsby, Dumbleby, Newton, Walcot, Fellingham, Billingborough, Horbling, Swaton, Helpringham, and Burton Pedwardine, returning about six o'clock to Sleaford, where an evening meeting was to be held in the Corn Exchange at eight o'clock, when papers were read "On the Dedication of the Churches of Lincolnshire as illustrating the History of the County," by Mr. Thomas Kerslake and Precentor Venables; and on "Kyme and its Tower," by Mr. Charles Kirk, M.A.

## THE NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY IN MARSH-LAND.

The annual excursion of the Architectural Society of the Archdeaconries of Northampton and Oakham was made last week, on the 14th and 15th inst., to Wisbech, for the purpose of inspecting some of the Marsh-land churches.

It may not be generally known where Marsh-land is situated, and it therefore becomes necessary to explain that, in the tract of flat fenland, between the outfalls of the rivers Ouse and Nene, is to be found that part of the county of Norfolk known as the Hundred of Freebridge Marsh-land, and which abounds in attractions of antiquarian and architectural interest unsurpassed by any district of equal extent in the Midland or Eastern counties.

The visitors arrived in Wisbech, which was the centre of operations, by an early train, and, having partaken of luncheon at the Rose and Crown Hotel, carriages were quickly in readiness for the journey which had been arranged. A goodly company was in attendance,

and a move was at once made for *Walsoken*, a parish which abuts upon *Wisbech*, from which town the parish church, said to be one of the finest in England, is distant a mile and a quarter. A few minutes sufficed to bring the tourists to their first halting-place. Having reached the church, dedicated to All Saints, they were met by the Rev. J. Young (rector) and party, and proceeded over the building. It is probable that the church was built by an Abbot of Ramsey, to whom the principal manor in the parish was given by Ailwin, Duke of the East Angles, in 1069. It consists of a nave, with north and south aisles, and chancel, on either side of the latter being a chapel, that on the north being dedicated to Our Lady. There is a massive western tower. Seven fine Norman arches divide the nave from its aisles on either side. The clearestory is a very fine example of the Perpendicular style, and the carved oak roof is wonderfully perfect, and in good preservation. The chancel arch is a beautiful specimen of transition Norman work, the chevron ornament being introduced in a pointed arch. Some beautiful carved screen-work separates the chapel on either side from the nave. Some fine remains of the roof-loft are worthy of notice, and a few traces of ancient stained glass may be found.

The party next proceeded to *West Walton*. The church is dedicated to St. Mary, and is a fine specimen of the Early English and Decorated styles. The tower is detached, and recalls the famous bell-tower at *Evesham*, to which it bears a strong resemblance. There is a sculptured monument in the north aisle, much mutilated, and evidently removed from its original place on the north side of the chancel. According to Bloxam it is the representation of an Abbot of Ely, and very probably of the founder of the church, which resembles the Presbytery of Ely Cathedral. There is a very fine southern porch, and traces of a similar feature on the north side of the church. The west front is interesting to a degree. The visitors were met by the Rev. W. Browne, rector. It is much to be regretted (says the *Northampton Herald*, from which journal this report is condensed), that so fine a church is not in the course of restoration.

Journeying along the old Roman bank, a wall erected for the purpose of protecting the broad acres of the district from the encroachment of the sea, a pleasant ride of three miles found the tourists at *Walpole St. Peter*. The church is one of the finest Perpendicular churches in Norfolk. Its south porch is enriched with heraldic tracery. The western tower, which is embattled, is the sole remnant of an earlier edifice in the Decorated style. A Sanctus bell exists in a fine turret over the chancel.

*Walpole St. Andrew* was next reached. The church is a good specimen of late Perpendicular architecture, and at the base of the western tower is a chamber said to have been inhabited by a recluse. From data which came to the knowledge of the visitors the building of the church may be fixed as having taken place between 1450-1500.

The next place visited was *Terrington St. Clement*, which has a very fine church in mixed styles of architecture. The party were met by the Rev. M. Crose, vicar, and Dr. Secombe, churchwarden, and conducted over the building, each of its many interesting features being ably explained. There is a detached western tower and a fine Perpendicular font, with canopy, the latter bearing several inscriptions. It is believed that this church was built by Edward Gonville, the founder of Gonville and Caius College, Cambridge.

A move was then made towards *Tilney All Saints*. The church, originally Norman, has been altered from time to time till it possesses traces of almost every style of architecture.

The church of *Terrington St. John* was to have been visited, but time did not permit this portion of the programme to be carried out, and the party returned from *Tilney* to *Wisbech*.

**Richmond Free Public Library.**—This institution was opened on Saturday last by the Countess Russell. The building has been erected under the Free Libraries Act by vote of the inhabitants, Mr. F. S. Brunton being the architect. We have already given some particulars of the building, together with a view and ground-plan. (See pp. 370, 377, ante.)

#### ARCHÆOLOGICAL SOCIETIES.

*Yorkshire Architectural and Archaeological Society.*—On the 14th inst., the members of this society had their summer excursion to Pickering and district. At Low Hall, which was first visited, Mr. T. M. Kendall showed his collection of antiquities, and the party afterwards proceeded to the ancient church of St. Peter, where they were received by the Rev. G. H. Lightfoot, the curate-in-charge. The Rev. G. Rowe, hon. secretary of the society, read a paper on the history and architecture of the edifice. The history of this interesting building, he said, might be summed up in a few words. Originally a Saxon church, as evidenced by the font, there must have been a large building in Norman times, of which all that now remained were the basement story of the tower and the north arcade of the nave. In the early part of the thirteenth century the southern arcade was built, the transepts, chancel, and aisles also, and the tower raised one stage higher. The nave and aisles were probably under one roof. The easternmost window in the south aisle is original, but the Early English work of the chancel and south transept is new. During the prevalence of the Decorated style, fully formed in the fourteenth century, the east window of the chancel was inserted, the sedilia and piscinas were put into the chancel, the north transept was rebuilt, the reticulated windows and door were inserted in the aisles, and the upper stage of the tower with the spire were added. The beautifier of the edifice at this time may have been Sir William Bruce, who is supposed to be commemorated by the cross-legged effigy now in the south chancel. Having visited Pickering Castle, the excursionists drove on to Newton, to the site of the ancient Roman camp at Cawthorne, passing which, shortly afterwards Cropton Church and the famous Hall Garth Hill were reached. Middleton Church was next visited. Here the Rev. G. Rowe read a paper, in which he pointed out the Saxon features of the edifice.

*Dorset Antiquarian Society.*—At the first meeting of the Dorset Antiquarian and Natural History Society for the present session, held at Dorchester the other day, the hon. sec. (Prof. Backman) reviewed the Society's work for the past year,—the meetings at Sherborne, Wimborne and Cawford Manor, Swanage, and Weymouth. The members afterwards visited Wolfeton House, where Mr. Banks, the owner, read a paper descriptive of the history and present condition of the building. The visitors next proceeded to Poundbury, where Mr. Cunningham, who has been engaged in excavations with a view to ascertaining the period in which the earthworks there were formed, stated his opinion the place was an old British camp, and said his investigations had led to the establishing of this fact beyond the shadow of a doubt. Mr. A. Pope said one writer had stated the camp was Danish; he should like to know if there was any ground for this suggestion? Mr. Cunningham replied there was not the slightest reason for such a theory; he also observed the camp had been claimed as belonging to four different periods, but he was satisfied it was old British. He further stated his belief the old Dunium mentioned by Ptolemy was connected with Poundbury and Dorchester.

*Somerset Archaeological Society.*—The annual meeting of the Somersetshire Archaeological Society will be held at Clevedon this year, beginning on August 23rd and ending on August 26th. Mr. G. H. Elton is the president for the year, and Mr. T. Dickinson the local hon. secretary. There will be excursions to Tickenham, Wraxall, Long Ashton, Flax Bourton, Backwell, Chelvey, Nailsea, Cadbury Camp, Clapton, Portbury, Portishead, and Weston-in-Gordano. A local museum will for the week be established in Clevedon, under the direction of Mr. Bidgood, the curator of the Society.

**Distraint upon a Town-hall.**—Whilst the Litchfield Town Council was sitting on the 16th inst., the sheriff's officer took possession of the Guildhall in which the meeting was being held. Bailiffs were also placed in the police office and at the Corporation stables. The claim was by Messrs. Paterson, sewerage contractors, for 3,500*l.*, which sum had been awarded to them, after much litigation and appeal. A stormy meeting of the Council was at once held, at which the money was ordered to be paid, and the officers were thereupon withdrawn.

#### THE THEATRE AT ONE'S OWN HOUSE.

If what we hear be correct, the two Telephonic Halls which are to form part of the International Exposition of Electricity, in the Palais de l'Industrie, Paris, will be great points of attraction. According to *La Semaine des Constructeurs*, the telephonic arrangements in these apartments will enable visitors to hear the performances at the Comédie Française and at the Opera House. Not only will they hear the voices of the singers and actors, and the music of the orchestra, but the minutest details will be audible, even to the footsteps of the dancers. Ten visitors are to be admitted at a time, and while they are listening for, say a quarter of an hour, ten others will take their places in the neighbouring chamber, to whom the current of sound will be turned on at the expiration of the stipulated time, and this is to go on all the evening.

#### DOMESTIC ECONOMY CONGRESS.

The third annual Domestic Economy Congress was inaugurated by a *conversazione* in the Royal Albert Hall on Monday evening. The conservatory of the Horticultural Society was thrown open and illuminated with the various systems of electric lighting now in competition before the public. The attendance was large and brilliant; the evening entirely successful.

The Congress opened for practical work on Tuesday morning, in the hall of the Society of Arts, John-street, Adelphi. The Countess of Airlie presided, and Sir Henry Cole acted as assessor. The first business was in Section A, which related to methods of teaching and examining domestic economy, with special reference to the definition of the same in the Educational Code. The author of the first paper was Lady Stuart Hogg, and in her absence it was read by the Rev. Newton Price, as well as he could decipher the MS., a difficulty which during the day prompted the assessor to read Lord Palmerston's ideas on plain handwriting. The paper described in dark colours the ignorance of our working classes in matters of domestic economy, as compared with people of the same class in Germany and France, and advocated making compulsory the teaching in State schools of all subjects of practical utility. Something at least should be attempted to encourage simplicity in dress, and to hold out inducements for thrift and industry. Another paper was read, being "Suggested outlines of a plan for establishing women's inspection of the teaching of domestic economy by counties proposed by some members of the executive committee of the Congress." This paper was the joint production of Sir Henry Cole, the Rev. Newton Price, and the reader (the Rev. J. F. Fawthorpe). It proposed that all public elementary girls' schools or departments, as respects the teaching of domestic economy, be under the sole inspection of women; that in mixed schools the examination and inspection of all works below Standard III. be assigned to women; that there should be a central office for examination and inspection in every county and large town; that any new system should be organised at practical South Kensington, and not at Whitehall, where domestic economy was better understood and encouraged forty years ago than it is now; and that there should be a local anniversary exhibition, with prize and certificate scheme. After a description by Mr. Price, school inspector, of the necessity in the mining districts of Monmouthshire of teaching in the subjects under discussion, another paper was read by the Rev. Newton Price upon county organisations for teaching domestic economy, urging that the subjects of health, needlework, and cookery should be taught by illustrated lectures; that all experiments should be inexpensive; and that teachers in cookery should be qualified by apprenticeship. A somewhat discursive discussion followed. Mrs. Cooper pointed out that hundreds of working-class girls are eager to learn domestic economy, but can find no one to teach them. Miss Kenrick thought that the present system of inspection would be better than the divided authority proposed in the outlines. Miss Wright was of opinion that domestic economy might well take the place of some so-called accomplishments in private ladies' schools. In a paper entitled "The Need of Domestic Economy in bringing up Pauper Children," Miss Andrews

(Guardian of St. Pancras) asserted that pauper children are indoctrinated into habits of waste in the workhouses. The next paper, read by Miss Barnett, was contributed by Mrs. Greenup, who proposed that the National School for Cookery should be transformed into a National Training College for Teachers of Domestic Economy. Sir Henry Cole appealed to all interested in the question not to allow a movement which owed its origin to Sir J. Kay Shuttleworth, but over which a blight came, to languish and die. Mr. W. J. Harrison read his prize paper, "On the Itinerant Method of Teaching Domestic Economy in Public Elementary Schools." A prize paper "On the Teaching of Domestic Economy," by Miss E. M. Brant, Board School, Great Berkhamstead, Herts, was well received. An historical paper as to what has been officially done with respect to domestic economy was read by Sir Henry Cole.

We may have something more to say next week about the proceedings of the Congress, which will be brought to a conclusion this Saturday, the 25th.

#### THE REBUILDING OF LEADENHALL MARKET, AND STREET IMPROVEMENTS ADJACENT.

LEADENHALL-STREET and Gracechurch-street are about to undergo an extensive improvement as regards new buildings in the immediate locality of the Market, now undergoing reconstruction. A large block of shop and other property, extending in Leadenhall-street from the corner of Gracechurch-street to a distance of about 100 ft. eastward, and the same length southward along Gracechurch-street to the boundary of the approach to the Market in that thoroughfare, is at present in course of demolition, preparatory to the erection of a large block of new property on the site, which covers an area of 17,000 superficial feet, and which includes the site, adjoining the market, on which the Leather Market formerly stood. The new premises will have handsome frontages to Leadenhall-street and Gracechurch-street, and a frontage of 113 ft. to the new street leading out of Leadenhall-street to the market, which is to be formed as a part of the new scheme.

The ceremony of laying the foundation stone of the market will take place on Tuesday next. The stone will be laid by Mr. Henry A. Isaacs, Chairman of the Markets Committee.

#### CHURCH OF ST. PAUL, FOREST-HILL.

SOME months ago six architects were invited to send in designs for the above proposed new church. Five sets of drawings were received, and the committee decided to refer them to Messrs. J. Lee & Sons, of Craven-street, Strand, who drew up a report on the merits of each design; after consideration, and numerous meetings, the committee eventually resolved that Mr. E. W. Mountford, of 22, Buckingham-street, Strand, and Mr. H. J. Appleton, of the Wool Exchange, Coleman-street, should be appointed joint architects, and these gentlemen have been instructed to prepare the working drawings.

The church is to contain accommodation for 900 people, and the cost will be about 6,500*l*.

#### PREVENTION OF SMOKE. SOCIETY OF ENGINEERS.

At a meeting of the Society of Engineers, held June 13th, in the Society's Hall, Mr. Charles Horsley, president, in the chair, a paper was read by Mr. A. C. Engert, on the "Prevention of Smoke."

The author, in choosing the title of the "Prevention of Smoke," instead of the "Consumption of Smoke," gives it as his opinion that smoke, once produced by the atmosphere and while being carried by the air, cannot be consumed, as every particle is surrounded by a thin film of carbonic acid. When, however, smoke is condensed as soot, heat will liberate the carbon from the acid, and then the former will burn rapidly. If this theory is found to be correct, carbon cannot destroy the germs of disease floating in the air.

For the consumption of smoke, many ingenious and elaborate inventions are on record, but not yet adopted, on account of expense and complexity of mechanisms. A simpler apparatus is, therefore, required.

To prevent smoke, the cold air must not be

allowed to come in contact with the gases arising from green coals, and, for this purpose, the furnace is, so to speak, divided into two parts. The fire-door is removed from the boiler, and a box fixed on in front. On each side of this box rails are placed inside, on which a plate or shutter may rest, which can be pushed forward or backward as required. When pushed forward it passes within the boiler and drops over the fire-bars some 18 in., thereby cutting off the draught, and preventing the condensation of the gases arising when fresh coals are put on, thus preventing smoke and the cooling of the boiler. A still more simple apparatus can be made with the same results, if the opening or flue will admit a higher box. The shutters can be cast together in one piece at an angle of about 130 degrees, to hang within the box on two pins or bolts, thus forming a swinging shutter. A rack is attached to the front of the shutter, to regulate the movement. The advantages of this apparatus are,—the cooling of the boiler is entirely avoided, the gases are consumed so that smoke is prevented, and there is a saving of from 15 to 20 per cent. of heat and coal.

In ordinary open firegrates the same object is attained,—viz., the prevention of the cold air coming into contact with the green coal,—by removing the fire-lump, and substituting for it a cast-iron box, which stands out at the back, and is open in front only, and which is to be filled with coal. Within this box is a movable iron plate, which can be forced forward, carrying with it the coals from which the gases have been extracted and consumed by the heat in front, or moved backwards when the box wants refilling. To regulate the draught so that the fire burns brightly in front, a plate is fixed under the grate coming forward at the bottom. Another plate resting on pins is placed on top of the box, to prevent the flame entering the register. By this simple apparatus a bright fire is maintained in front of the grate, half of the heat usually escaping into the chimney is saved, there is little or no smoke, and the smallest coal can be used, and is, indeed, preferable.

#### FOREIGN SERIALS.

THE *Revue Industrielle* (Paris, June 15), publishes the regulations issued by the Préfet of Police for the prevention of fire in theatres. The building, where possible, must be separated from all other buildings by a passage 10 ft. wide. Where this is not possible, an additional 10-in. brick wall is to be erected. An iron curtain is to be used, in order to avoid danger to the audience from falling pieces of woodwork &c. Precautions are taken to avoid a draught being caused by the (gas) sunlight. Very strict regulations have been made with regard to the lighting. All the gas-pipes are required to be of iron. The auditorium, stage, and offices are to be lighted from three different meters, so as to avoid the possibility of a total extinction of light. In all the public parts of the house oil-lamps are to be kept burning during the performances, so that there may be sufficient light, independently of the gas, to enable the audience to find its way out. All lights are to be protected with a wire cover. All electric wires are to be insulated with some incombustible material. No steam-engine can be employed without special authorisation. All the decorations are to be inspected every six months, and to receive a coating of some fireproofing liquid. Iron stairs are to be fixed inside and outside the building. A complete water-service, with hydrants, on all the floors, is compulsory, whilst the theatre must have telegraphic communication with the nearest fire-engine station. The width of all passages is fixed, with a view to providing easy exit, for which purpose all the doors are to open outwards. These regulations are to be enforced as quickly as possible.

**British Blast Furnaces.**—From an official return, it appears that there are now 556 blast-furnaces at work in Great Britain out of 967 erected, the number in operation being 27 fewer than at the end of March. Scotland has the largest number at work in proportion to its total of any district, 120 being in blast; and South Staffordshire the fewest, 42 being in operation out of 144. Cleveland and Durham district has 119 in operation; Cumberland and Furness, 54; and South Wales, 65. Preparations are being made for reducing the production of the Cleveland and Durham district to the extent of close upon 1,000 tons per week.

#### PATENT RECORD.\*

- 2,442. J. L. Corbett & W. Loohead, Glasgow. Apparatus for regulating the supply of water, &c. June 3, 1881.
- 2,443. C. H. von Ullner, Euston-road. Apparatus for regulating the flow of water, &c. June 3, 1881.
- 2,453. J. Herd, Birmingham. Roadways, pavements, &c. June 3, 1881.
- 2,464. J. Taylor, Clapham. Tiles and their attachments. June 4, 1881.

#### NOTICES TO PROCEED

have been given by the following applicants, on the dates named.

June 7, 1881.

- 505. T. Rowan, Ryde. Chimneys or flues. Feb. 5, 1881.
- 673. J. D. Adams, Marshall-street. Safety-valves for the boilers of kitchen ranges, &c. Feb. 16, 1881.
- 744. H. Skerrett, Birmingham. Door-chains, &c. Feb. 21, 1881.

June 10, 1881.

- 527. A. Clark, New-cross. Water-closets. Feb. 7, 1881.
- 528. J. C. Vanolhe, Providence, U.S.A. Apparatus for cutting or sawing stone, &c. (Com. by P. Gay, Paris.) Feb. 7, 1881.

#### ABRIDGMENTS OF SPECIFICATIONS

Published during the Week ending June 11, 1881.

- 4,178. F. Parker, Cambridge. Manufacture of cement and bricks.

This invention utilises calcareous marl, containing a large proportion of carbonate of lime. The marl is dried, and then ground to powder, when it is made into bricks, and burnt in a cement-kiln, being afterwards again ground into cement. The bricks are made in the same way. (Protection not allowed.) Oct. 15, 1880. Price 2*d*.

- 4,208. H. Phillips, Heavitree. Urinals, &c.

The discharge-pipe is led down to a receptacle containing dry earth, &c., and the fluid is discharged below the level of this earth. The earth, when saturated, may be removed and dried. Oct. 15, 1880. Price 2*d*.

- 4,272. J. Martin & W. A. Ward, Hyde. Ventilators.

A tube, open at both ends, has a cap fitted on the top. The lower end has a perforated rosette on it, which is let into the ceiling, and allows the vitiated air to escape. (Pro. Fro.) Oct. 23, 1880. Price 2*d*.

- 4,295. P. Langridge, Eastbourne. Apparatus for raising window-sashes.

This is effected by a coiled spring inclosed in a case, which has a groove formed outside, round which a cord or metal tape is wound, the other end of which is attached to the sash. There is a ring of ratchet-teeth on the spring-case, and a pawl which is made to engage by a weighted lever or spring, and is actuated by a cord. Oct. 21, 1880. Price 6*d*.

- 4,365. W. T. Sugg, Westminster. Baths.

This relates to that class of bath in which the water is heated by gas while in the bath. A number of tubes are inserted in the head of the bath, and led along under the cover to the foot thereof. The gas-burner is placed under these tubes, whereby a great heating-surface is obtained. The products of combustion are conducted by a flue to an opening in the side of the bath above the water-level, and a conductor leads the vapours to the water, where they are absorbed. Oct. 23, 1880. Price 6*d*.

- 4,370. J. W. Holland, Liverpool-road. Water-closets, &c.

A closed chamber communicates with the closet-basin, from which a ventilating-pipe is led to the open air. The trap of the closet discharges into the chamber, from the bottom of which the soil-pipe is led. The overflow-pipe from the closet-basin discharges into the upper part of the chamber, over whose orifice is an india-rubber valve. An india-rubber ring is used to keep the joints of the pipes tight. Oct. 23, 1880. Price 6*d*.

- 4,386. J. E. Dry, East India-road. Cowl.

The bell-mouth of the cowl has a cone inclosed in the centre, which has a narrow aperture round the base, and is made to face the wind by a vane; the air therefore escapes with great force through this annular space, and effectually drives away the smoke. Oct. 27, 1880. Price 6*d*.

- 4,411. U. Bromley, G. Crowe, and W. James, Chester. Cisterns for flushing apparatus for water-closets, &c.

A syphon is fixed in the cistern, so that when this syphon is filled the entire contents of the cistern will rush through the syphon and flush the closet. The filling of the syphon may be performed by a cock which is adjusted so as to fill it in a certain space of time, or by a handle to open the cock when required, or by a small pipe led from the cistern into the discharge-pipe, fitted with a cock, on opening which the rush of water causes a vacuum in the pipe, and immediately fills the syphon. Oct. 23, 1880. Price 6*d*.

- 4,435. C. M. Westmacott, Westminster. Stoves.

A hollow chamber is placed in the recess, of such a form as to extend to a certain height along the back and sides thereof, and to leave a space open in front, in which is

\* Compiled by Hart & Co., patent agents, 23, New Bridge-street, E.C.

placed the grate, which has bars all round it. A set of moveable bars is placed beneath the bottom bars so as to regulate the rate of combustion. Upon the hollow chamber is a plate covering the space above the grate, which has openings at each end to allow the escape of smoke. This plate is used as the hot plate. Two curved flues are formed, one from each end of the plate, and a damper is fitted at their junction. The circular space between them is fitted with a door and used as an oven. Oct. 30, 1880. Price 8d.

4,500. R. H. Bishop & A. S. Bishop, Islington. Sash-fasteners.

A pair of lugs are fixed in a plate to the bottom rail of the upper sash, to which is pivoted a slotted lever, which is kept vertical by a spring coiled round the pivot. Upon the top rail of the lower sash is fixed a small box to receive the spring bolt, to the inner end of which is secured a segment piece with catches which project upwards through the top of the box, and will enter the slot in the lever when this is drawn down towards a horizontal position. (Pro. Fro.) Nov. 3, 1880. Price 2d.

4,501. J. H. Bourlay, Frankley. Smoke-consuming stoves, grates, &c.

The bottom of the grate is solid, except a small space in the centre, where bars are used. Beneath these is a box, open to the bars, but closed below. The box is divided into two portions, one of which is supplied with air by a fine rising on the side of a "register" door communicating with the chimney. When the door is closed, the smoke ascends the flue, and is led down behind the back of the fireplace, and enters one portion of the box under the grate, whence it passes again to the fire and is consumed. (Pro. Fro.) Nov. 3, 1880. Price 2d.

4,505. A. Thomson & R. Anderson, Glasgow. Chimney-cowl.

This is made in two parts. One is cylindrical or slightly conical, and resembles an ordinary plain chimney-cow, and the upper part is fitted with a hood, made of a conical shape, and attached to the can by a sliding ring. It is larger than the can at the bottom, so as to leave an annular passage all round. In the hood is a conical deflector to prevent the wind blowing down the same. (Pro. Fro.) Nov. 4, 1881. Price 2d.

4,509. E. Warner, Stowmarket. Apparatus for supplying disinfectant to water-closets, &c.

A reservoir is provided, the filling opening of which can be closed air-tight, which communicates by tubes with a lower cistern. In this a syphon is fitted, one end being in the lower cistern and the other end in the supply-pipe of the closet. The upper cistern being supplied with the disinfectant, and closed, a certain quantity will pass into the lower reservoir. When water flushes the basin out a certain quantity will pass into the lower reservoir and dilute the disinfectant. On the flow of water ceasing, and as the water falls in the supply-pipe below the connection of the syphon, the diluted disinfectant will pass through the syphon into the pan. Nov. 4, 1880. Price 6d.

4,518. H. Seward, Queen Victoria-street. Disinfecting closet-pans, &c.

A chamber is formed below the pan, communicating with the soil-pipe, which is protected by an overhanging cover, so that no water can enter. This chamber is supplied with carbolic acid. Nov. 4, 1880. Price 6d.

4,532. G. K. Hannay, Havorthwaite. Fire-grates.

The basket part of the grate is formed of bars, and mounted by pivots upon bearings in a frame, so that the basket can be turned in a vertical plane upon these pivots. The sides of the basket are fitted with plates or covers, which may be used when required. When fresh fuel is added to the fire, it is placed in the upper part, and the cover being placed on that side, the basket is turned round so that the upper part becomes the lower part, and the smoke is thereby consumed. (Pro. Fro.) Nov. 5, 1880. Price 2d.

4,577. H. Fajla, Westminster. Manufacture of blocks of concrete and cement for building, &c.

The concrete or cement is mixed or gauged in the required form, and then subjected to moist heat by being placed in a chamber into which steam is admitted, so as to set directly on the material. An alkaline solution may be mixed with the cement, so that it may be speedily hardened. (Pro. Fro.) Nov. 8, 1880. Price 2d.

136. W. Page, Lambeth. Slabs for paving street corners.

The claim here is for the shape in which the slabs and the moulds thereof are made. They are so shaped that, when in proper combination, the slabs may form a quadrant, sector, segment, or any other figure that may be required. Jan. 12, 1881. Price 6d.

**Tendering at Croydon.**—Complaints are made in the *Croydon Advertiser* of the manner in which the local School Board obtain tenders for works. In one case it is alleged that the mistake was made of first inviting a builder to tender, and then, when he was found to have sent in the lowest price, to reject his tender, not on the ground that the work could not be done for the sum estimated, but that he was not a man big enough for the job. In the competition for other works, only three tenders were sent in, and one builder says that the bill of particulars, the specification, the schedule of quantities, and so forth, were only delivered to him on the Saturday before the last Bank Holiday, and tenders were to be sent in on the day after the Bank Holiday. Mr. Henman, the architect, explains that in this case at the last moment a builder decided to compete, and that the one who was invited to compete instead necessarily received his quantities late.

## COMPETITIONS.

**Guthrie Memorial Church, Edinburgh.**—The Free Presbytery of Edinburgh on the 16th inst. approved of plans for the erection of a new church in Easter-road, to be named after the late Dr. Guthrie. The committee entrusted with the duty of procuring designs for the edifice invited plans from four architects by private competition, with the result that they selected those of Mr. Charles S. S. Johnston, Pitt-street. The site of the building is on the east side of Easter-road, adjoining the new Episcopal Mission Chapel, and has a frontage of 70 ft. by 115 ft. of average depth, consisting of a nave and side aisles. The church measures 73 ft. by 47 ft. internally, and is seated for 562 persons, with an end gallery stretching across the western portion of the nave and aisles, seated for 190 persons, giving a total of 752 sittings. A hall, 36 ft. by 24 ft.; session-house, 19 ft. by 15 ft.; vestry, 12 ft. by 10 ft.; and lavatory, are situated in rear of the church. The nave of the church is separated from the aisles by arcades formed of cast-iron columns, supporting timber arches, whose spandrels are pierced with cinquefoils and circles; directly over these arcades are two rows of timber dormers or clearstory lights, having three snap-headed openings each. The style adopted throughout is Early English Gothic of a very plain type, and the estimated cost of the church is 3,500l.

**Blowich Board Schools.**—On the 14th inst., a special meeting of the Walsall School Board was held for the purpose of selecting plans and designs for the intended new Board Schools at Elmore Green, Blowich. The choice ultimately lay between Mr. S. Loxton, Walsall, and Mr. Fleeming, Wolverhampton, and the plans prepared by the former were in the end chosen, subject to certain modifications in matters of detail which the Building Committee were authorised to arrange with Mr. Loxton.

## BRICK-MAKING AT BRIXTON.

At a meeting of the Lambeth Vestry, on the 16th inst., the Sanitary Committee reported that Dr. Soper, assistant medical officer, had visited the brick-yards of Messrs. Harris & Loat, Acre-lane, Brixton, on two occasions. In Mr. Loat's yard he found a stack burning and pouring out most offensive fumes, and, in his opinion, highly prejudicial to the neighbourhood. He watched very carefully the process of manufacture, and brought away two bags, filled for him by the foreman, containing sifted ashes (fine) and the coarser material that was used for burning the bricks. The bag of fine ashes was offensive to the smell in its moist condition, and in his opinion consisted largely of organic material, vegetable and animal, and this was used in mixing with the earth to make the bricks, the coarser material to the naked eye consisting of rags, hair, corks, coke, bone, oyster-shells, &c., and was in burning certain to produce a very offensive and deleterious odour. He obtained also from each yard an unburnt brick, and from inspection he had little hesitation in saying that very little clay proper entered into its composition. It contained evidently animal and vegetable detritus, and in his opinion was a source of bad odour when burnt apart from any material that might be employed in the process of burning the bricks. So strongly did he entertain this opinion, that he asked the committee to allow a quantitative and qualitative analysis to be made of the bricks, as also of the two specimens of material he had submitted to their notice. He did not believe that clay proper entered into the composition of these bricks, but only as an accidental element, and that the brickfield was simply a thing of the past, and was now a manufactory of bricks wholly and solely of material brought from the outside in the shape of dust rubbish and road-sweepings.

Mr. Fowler said proceedings had already been taken in this case, and the magistrate had awarded a penalty; but the penalty was a very nominal one. Notwithstanding the magistrate's order that Mr. Loat should discontinue burning bricks of this unwholesome material, he appeared to have taken little notice of that order. It was quite time, therefore, that the vestry should take steps on behalf of the inhabitant ratepayers of the parish, and also to expose the manufactory. He moved that Dr. Minto be directed to make an analysis of the bricks, and that should the result of the analysis confirm the opinion of Dr. Soper, the officers of the Vestry be directed to take proceedings.

Dr. Gillard seconded the motion. Mr. J. Smith said he had had submitted to him last week certain samples of what were termed bricks. After some thirty years' connexion with scientific chemistry, he could assure the vestry that he had never seen anything at all equal to these. In the burning of these bricks the carbonaceous matter was burnt. The organic matter was thus got rid of, but still they were not bricks. The material was simply held together, with no cohesive force whatever.

Mr. J. Hoskins thought that if the district surveyors could be brought to account, it would be better for the health of the parish.

The resolution was agreed to. We quote the foregoing report from the *South London Press*. Mr. Hoskins, unless he has been misrepresented by the reporter, seems to have peculiar notions of the duties of district surveyors.

## CASES UNDER BUILDING ACT.

At Highgate, Mr. William J. Wooller, licensed victualler, and landlord of the Flask Inn, South-grove, Highgate, appeared before Messrs. Bodkin, Lorriloe, Brooks, Bayley, and Colonel Stedall, to answer a summons taken out by Mr. Alfred Bovill, district surveyor for North St. Pancras, charging him with contravening the Metropolitan Building Act, 1855, by the erection at the back of the Flask Inn of a building enclosed on two sides with timber, and with a roof of timber and canvas.

Mr. Bovill said that his attention having been called to this building, he gave the defendant notice in December last to remove it, but he had not done so.

Mr. Ricketts contended that the place was not a "building" within the meaning of the Act. The posts did not go into the ground. It was a tent erected for the purpose of giving lavatory accommodation to the members of a club called the Laidon Harriers.

Mr. Bodkin, who had seen the place, was of opinion that it did come within the meaning of the Act, and furthermore that it was a dangerous structure, which ought to be immediately pulled down.

Mr. Brooke (president of the club named), Colonel Stedall, and Mr. Bayley, three of the magistrates, proceeded to view the place, and on their return.

Mr. Brooke said they had come to the conclusion that the erection, which was in direct communication with the inn, was a building within the meaning of the Act. The Bench accordingly made an order for the building to be pulled down.

## COMPENSATION CASES.

**The Earl of Derby v. The Corporation of Preston.**—On the 16th and 17th inst. a Sheriff's Court was held at the Preston Town-hall (before Mr. J. K. Aston, assessor, and a special jury summoned from various parts of the county) to assess the amount to be paid to Lord Derby for part of the site of the proposed free library and museum for that town, and the property now standing thereon.

In opening the case, Mr. Gully, Q.C., said the land in question, as the jury would have seen, was encumbered by buildings which were in about as bad a state as they possibly could be; but the question for the jury was the value of the land, taking the buildings as only old materials. These buildings formed Lancaster-road, and would be a capital site for shops. Some of the land was let at an annual rental of 14s. per square yard, and the remainder at 8s. per yard.—Mr. George Hall, principal agent for Lord Derby, having given evidence to the effect of this statement, Mr. E. Gardner, architect and surveyor, said he had valued the land in question, of which 143 yards were worth 12s. a yard, or 1,716l.; 674 yards were worth 10l. a yard, or 6,740l.; and 45 yards he valued at 3l. 6s. 8d. per yard, or 160l.; and for old material he set down 50l.—making 7,686l., which, with 10 per cent. added for compulsory sale, would make 8,454l. 12s. If the land were built upon he estimated that it would be worth 8,514l.—Mr. Harding, architect and surveyor, said he valued the land at 6,191l. 10s. with 10 per cent. added for compulsory sale (619l. 8s.), making a total of 6,810l. 18s.—Mr. E. Brerley, Q.C., Blackburn, valued the property at 6,773l. 4s., including 10 per cent. for compulsory sale.—Mr. Thomas Howard, agent for General Fielden, Winton Park, Blackburn, estimated it at 6,736l. 10s.—Mr. Doring, civil engineer and surveyor, of Manchester, at 6,490l., with the 10 per cent. added, making 7,139l. Mr. Eigin, Q.C., on behalf of the Corporation, said the counsel and witnesses for the claimant had put too high a valuation on the property. He called Mr. Garlick, borough steward and treasurer, and civil engineer, who said he had known the property for the last forty years. If it were not pulled down it would very soon fall down. If buildings were erected suitable for the site, there would be 226,757 cubic feet of building, at 6d. per cubic foot, making a total cost of 6,678l., which at 6 per cent. would realise 375l. gross for the year, and this at twenty years' purchase would give 7,500l. Deducting the cost of the buildings that would leave 1,922l. net rental capitalised, which, with 10 per cent. add for compulsory sale, would make 2,016l. As he had valued it at 2,005l., Mr. Garlick, in cross-examination by Mr. Gully, said he was of opinion that if a prudent owner were to spend 5,000l. in building lock-up shops on the land in question he would only improve its value to the extent of about 100l. The land at present was worth about 1,724l., and it would then be worth about 1,832l. Mr. John Cross, of the firm of Cross & Eadie, surveyors and valuers, of Manchester, said he thought the

land and property, as they at present stood, were worth about £1,872, which, with the 10 per cent. added for compulsory sale, would make 2,060. Considering that Lord Derby had had powers from the Corporation to make vaults or cellars for the feet under the roadway, he should increase that amount to 2,371, which was as much as anybody would give for the property, and was its full value. Mr. J. Hibbert, architect (the mayor), valued the property at £1,866. 12s. 7d.; Mr. B. Vyvians, of Messrs. Kyres, Vyviers, & Myres, architects and surveyors, of Preston, estimated it at £3,181; and Mr. Newton, of Salford (formerly borough surveyor of Preston), at £2,526.

The jury gave a verdict for 4,387.

**Swan v. Great Northern and Great Eastern Railway Companies.**—Sir Henry Arthur Hunt, the arbitrator who sat at Lincoln on the 8th and 9th inst. to investigate the claims to compensation made by the Rev. C. T. Swan, in respect of land at Lincoln taken by the above railway companies for the new line from Lincoln to Spalding, has made his award. The witnesses for Mr. Swan valued the land at prices ranging from 16,054. to 16,720., whilst none of those called for the railway companies admitted that he was entitled to more than 4,434. Sir Henry Hunt has awarded 5,323.

#### COMMISSION ON SALES.

SMITH V. DUKE.

THIS was an action (tried in the Queen's Bench Division of the High Court of Justice last week, before Mr. Justice Field and a special jury) brought by a firm of house-agents in Regent-street against General Duke to recover commission of 24 per cent. on the sale of the house No. 32, Devonshire-place, belonging to the defendant. The defendant paid 20. into Court to meet any claim for work done.

The house was sold in January, 1881, to Capt. Steward for £3,202.; but in the August preceding the General had placed the house on Messrs. Smith's list. The plaintiffs had subsequently introduced Capt. Claremont to the defendant as an intending purchaser; the negotiations with him, however, fell through. In October, Messrs. Walton & Lee, another firm of house-agents, sent a clerk to the defendant asking to be allowed to sell, to which the defendant consented; and, ultimately, the sale to Capt. Steward took place through them. The defendant has paid Messrs. Walton & Lee their commission and received an indemnity from them, being in this action only the nominal defendant. After the sale, according to the plaintiffs' evidence, Capt. Claremont entered into possession, and still remains in occupation of the house. The General, in his evidence, said he did not know when Capt. Steward purchased that he was buying on behalf of Capt. Claremont. According to the plaintiffs' witness, the former, when asked if Capt. Claremont was mixed up in it, replied that he declined to answer, thinking it a very impertinent question. The General was the only witness called for the defence, and

Mr. Clarke asked the jury to say that the plaintiffs had not made out their claim to commission, and that the 20. paid into court was amply sufficient to meet any claim for the labour done in writing letters, sending cards, advertising, &c.

Mr. Day, in his reply, stigmatised the action of the real defendants, expressly excluding the General, as a juggle to defeat the plaintiffs' just and lawful claim for commission on this transaction. None of the parties to the real sale had been called before the jury, except the General, who introduced nothing new about it.

Mr. Justice Field said the question for the jury would be whether the relation of buyer and seller had been brought about by the means of the plaintiffs. He thought it a mercantile case.

On the jury apparently assenting to this, his Lordship was just going to enter a verdict for the plaintiffs, when one of the jurors said he did not agree in that verdict, and the learned Judge then proceeded to sum up, reading from the judgment of the late Chief Justice Erle in *Green v. Bartlett* (14 O. B., N. S., 686). His Lordship is entitled to commission on a sale of property has repeatedly been litigated; and it has usually been decided that, if the relation of buyer and seller is really brought about by the act of the agent, he is entitled to commission, although the actual sale had not been effected by him.

He did not know if that decision removed the doubt from the mind of the gentlemen who objected?

That gentleman then assented, and the jury returned a verdict for the plaintiffs for the commission claimed, £4. 4. 656, leaving the 20. paid into Court.

The learned Judge then gave judgment for the plaintiffs for 761. with costs, and granted a certificate for a special jury.

**Oxford Architectural Society.**—On Saturday week the members of the Oxford Architectural Society, to the number of about eighty, paid a visit to Windsor Castle and Eton College. Arrangements had been made for conducting them over the Castle, St. George's Chapel, and other places of interest, by the Rev. Canon Pearson and Mr. J. H. Parker, C.B. Mr. James Parker read extracts from a paper which he had prepared on the foundation and early history of the Castle. The party afterwards inspected the Albert Memorial Chapel and St. George's Chapel. At Eton College the quadrangle, cloisters, and other parts were duly inspected, but the chief interest was centred in the chapel and cloisters.

#### APPEAL AGAINST AWARD.

CHIPPES V. ROAR.

THIS was an appeal before Mr. Justice Fry (Mr. Pearson, Q.C., and Mr. Beaumont, for the plaintiff; Mr. Glasse, Q.C., and Mr. Cairns, for the defendant) against the decision of the arbitrator in the above case, a timber-trade dispute, between the above-named persons. The claim was for one-half-share of 2,214. 16s. 2d., being the award of net profits of business for about twelve months. An order was made for Mr. Hoar to pay within ten days, and costs of appeal.

#### THEATRES.

**Belfast.**—The Theatre Royal, which was totally destroyed by fire on the 8th inst., is to be rebuilt at once. Mr. C. J. Phipps, F.S.A., is engaged to prepare plans for the new building.

**Kidderminster.**—The foundations for a new theatre for Kidderminster have been commenced. The new building will be situated in the New-road, on the banks of the River Stour.

**London.**—It is proposed to build a new theatre on the north side of Great Queen-street, Lincoln's Inn Fields, on the site of premises formerly occupied by the Boys' Refuge. The site extends back to Parker-street, to which the theatre will have a frontage. The theatre will accommodate about 800 persons. Mr. Thomas Verity is the architect. Great Queen-street was at one time much affected by actors as a place of residence. It is stated that in the house which formerly stood on the site of No. 74, and which now forms part of the site of Messrs. Wyman & Sons' new printing-office, resided Knight, the comedian, father of the late Mr. J. P. Knight, secretary of the Royal Academy.

**Inverness.**—The excavation of the ground on the site of the new Theatre and Opera-house in Bank-street has been proceeding for some time past, and is now completed. A meeting of the new Theatre Company was held last week, at which it was agreed to order the contractors to proceed with the erection of the building forthwith.

#### PRACTICAL PLUMBING.

SIR,—Mr. Hellyer, every plumber must admit, has set himself a rather tough job in undertaking to enlighten such highly practical and experienced audiences as have been witnessed at his lectures, and he is entitled to every credit for the efforts which he is making in that direction, although I cannot say that I am quite at one with him in his practice in many important points. We must not expect that an individual lecturer, with what one would call limited experience, should be accepted as an unquestioned authority on all points. For instance, with regard to wiping joints, I must take the liberty of differing from Mr. Hellyer's opinion that a short joint as made by Scotch and American plumbers is not quite as good as and more practical than a long one, as the joint, properly made, is quite as sound, and may be made with ease either upright or underhand, without the use of plumber's irons. This may be new to some plumbers, but the writer will be pleased to demonstrate the fact in a practical manner to any who doubt this or are interested to know. This is the usual practice in America and in many parts of this country. Wiped joints may also be made with the use of the French lamp in the same fashion as the Frenchman builds his overcast joints, which might just as well be wiped. Joints may also be made by the use of an air blow-pipe and gas jet, which is probably the safest way on a building where there is danger from fire. The blow-pipe is similar to that used for homogeneous soldering, better known as lead-burning. Then with regard to lead-bending, the method recommended by the lecturer I may be allowed to say is not one that can be applied in all cases, as the dummy would scarcely make an impression on pipes of heavy substance such as those used on board ship, where the copper pipes and pump suction are bent and contorted to all manner of shapes and forms. If I had a plumber that could not make a bend in any ordinary pipe without the use of this tool and at the same time keep the bore at the throat of an equal diameter to the pipe, and that without reducing the thickness at the heel, a "dummy" would be the term that I should be inclined to use in my estimate of his capabilities. I trust, however, that young plumbers will pay earnest attention

to the lectures of Mr. Hellyer, while at the same time remembering that there is no finality in the teachings of any one man, and still keeping their minds open and being ever on the alert to catch the teachings of the foremost men amongst them. I should be sorry to think that our "Yankee" comrade should measure the capabilities of us "Britishers" as plumbers by the teachings of any one individual amongst us, as it is rare that men are strong on all points. I was pleased to hear the remarks that fell from the worthy chairman, Prof. Corfield, which were both instructive and interesting, but considering that there was apparently a strong desire on the part of several present to ask questions, I am of opinion that a little well-regulated discussion would be greatly advantageous, as it is but seldom that the opportunity occurs of having so many thoroughly good plumbers together, on which point the lecturer must be congratulated on being entirely successful.

JOHN SMEATON.

#### "PURE AIR AND RADIATING HEAT."

SIR,—In attempting to criticise my letter on the above subject, I notice Mr. Crane says (*Builder*, p. 745) that I "do not believe in radiation." It is very bold of him to make this assertion on my behalf, since, on the contrary, I believe radiation to be the best means of warming the floors, walls, furniture, and all solids in a room. Mr. Crane is evidently one of those possessed with the very delusion that my remarks were intended to dispel; and I must regret that the illustration I used, simple as that gentleman admits it to be, was not understood by him. The cold air he mentions, coming up between the sashes, would not have the effect of preventing the ice thawing, if it were also exposed to strong rays of heat; and, at the time I especially noticed, there was also the outline of the window-fastener, and the back of a chair left in ice on the lower sash.

It cannot be denied that it is a fortunate thing for the inhabitants of this earth that the sun, the purest source of radiant heat, has not been gradually warming the air since creation, but only the solid objects upon which the rays strike after their long journey. Then, of course, these warmed objects, in their turn, warm all air which comes into actual contact with them, causing it to keep flying off in particles in proportion to the heat transmitted to the solids. Hence the cause of the thermometer rising in summer, out of doors, when every object is warmed first by the sun; or, in a room, when the solids warmed by the fire are giving back their heat to the air.

It is constantly being observed also, that the face of a door or wall upon which the sun is shining may be quite warm, say contain 70° of heat, while the air around it may be at zero; if I may be allowed to offer this as a further illustration.

It is for this very quality that I prefer radiation as a means of warming, since it warms the body and all objects it comes in contact with (thus not robbing it of any of its own heat), at the same time leaving the air cool for breathing so long as such air, which has become warmed by the solids, as explained above, is carried off, and fresh cool air brought in at whatever temperature preferred.

S. R. EGLINGTON.

#### THE USE OF COLOURED MARBLES IN ENGLISH ARCHITECTURE.

SIR,—Mr. Jackson's very practical paper has doubtless been read with great pleasure by those who, like myself, think that colour in architecture is even more necessary in the cold grey climate of England than in that of Italy, where a bright warm sun has such a charming effect upon buildings.

As Mr. Jackson, however, after delighting us with splendid visions of architectural polychromy tells us, apparently with much regret, that our climate forbids the use of coloured marbles externally, and as this is quite true, I should like, if you will allow me, to say a few words to show that we Englishmen have it in our power to console ourselves to a very large extent for this misfortune.

We have native materials of everlasting durability, even when exposed to the powerful effects of London gases and to our changeable Northern climate, at our very doors, so to speak, and rivaling in colour the marbles referred to by

Mr. Jackson,—colours varying from black and white and various neutrals to the richest positives. I allude to the porphyries and syenites of Leicester and Worcester, the serpentines of Cornwall, the granites of Scotland and Devonshire, the basalts of Shropshire, and to the greenstones and lavas of North Wales. Of course it would be useless to refer to these treasures of the earth if there were no prospect of their being made available at moderate cost; but, as arrangements are in progress for this purpose and are nearly completed, I need not hesitate once more to ask attention to them. Superb would be the result in a building treated internally as recommended by Mr. Jackson, and with its exterior walls faced and decorated with these materials. The principles of design he lays down are applicable to both, though in granite moulded work should, of course, be reduced to a minimum, and the panels filled with flush geometrical designs or mosaics of the richer colours.

It is satisfactory to find Mr. Jackson in full agreement with Mr. Conybeare and the late Messrs. Barry and Burgess, in protesting against the present practice of placing two such inharmonious materials in juxtaposition as polished marbles or granites and dull porous stone. This is disagreeable enough when a building is just completed, and the stone is free from soot-absorption, but after a few months the contrast is painful and inartistic in the extreme. The stone has changed from white to black, while the polished granite has suffered no change whatever. Clearly the exterior of buildings in London should be entirely of one material or the other, and when further facilities are offered for using the more durable of the two with economy, it will scarcely be disputed which should be adopted.

HENRY TRAVIS.

#### THE ENGLISH LAND SYSTEM.

SIR,—That the English land system is at present the cause of the depressed state of agriculture in England I will endeavour to prove, as I explained in my letter of the 7th ult. (p. 688). The agricultural provinces of America are now connected by railways and lines of steamers with England, and owing to competition between rival lines, the tariff is very low. The result is, that the American farmers can successfully compete with English farmers even in country towns. But how is it the Americans cannot successfully compete with the French? Simply because of the system of peasant proprietorship existing in France. In that country there are close on 10,000,000 landowners (or about one-third of the entire population). The result is, that almost every nook and corner of the land is in a high state of cultivation (and this may also be said of other Continental countries with the same system of land tenure). The French farmers own their land; they take a pride in carrying out improvements, are not harassed with a constant fear of increased rents, and can hold their own against the Americans.

—To this system of land tenure France owes her present prosperity. How few are the French farmers who emigrate from *la belle France* may be seen by referring to emigration statistics.

Here in England the land system (a relic of the feudal age), by its barbaric laws of entail and primogeniture, has succeeded in what its originators intended it should; that is, in preventing the land from becoming the property of its cultivators. As in the case of France in the seventeenth century, thousands of acres are reserved for aristocratic sport; and the bulk of the land, not only in England, but in Ireland and Scotland, is owned by a few thousands. How different, this, to the land tenure of France! If the English system of land tenure was formed on the lines of that of the French, your well-meaning correspondent of the 11th inst. (p. 745) would find that the English agriculturist would be able to hold his own against the American, and every nook and corner of dear England would be cultivated by what is the most permanent source of strength to a nation,—a great and thriving population of peasant proprietors.

B. H. THWAITES.

**Throwing Road-sweepings into the Thames.**—At the Hammersmith Police Court, last week, Mr. Charles Bates, a contractor, of Chelsea, appeared to answer two summonses at the instance of the Thames Board of Conservancy for allowing road-sweepings to be thrown into the river. In the first case the river-keeper saw a barge belonging to the defendant moored off the Fulham banks, near Wandsworth Bridge. It was full of mud, which two men were throwing into the river, instead of wheeling on shore. In the second case, Inspector Long, of the Thames Police, saw another barge belonging to the defendant at the same spot. Mud was lying on the shore. There were marks of mud having been thrown overboard. Mr. Haynes said the defendant was the contractor for the removal of road-sweepings and refuse for the parish of Chelsea, and employed a man named Rye to empty the barges. He called Richard Rye, a sub-contractor, who said the mud was not thrown into the river with his consent. Mr. Sheil fined the defendant 10*l.* and 2*s.* costs in each case.

#### PRACTICAL PAPERS.

SIR,—Since reading your proposal to the Institute to contribute something to the more practical side of our profession, and Mr. F. E. Conder's remarks on the new Bursary, I have thought whether it might not be possible to have a series of papers in the *Builder* (illustrated when required) from our architects, dealing exclusively with questions of a practical nature, showing how they individually have treated problems of more or less difficulty occurring in the practice of their profession or detailing any devices, or shall I venture to say "inventions," which they may have worked out and applied in the works they may have been called upon to design.

Such a series of papers, forming an illustrated repository of the problems coming before architects in active practice, might fairly be assumed to contain something of interest to most of us, and especially to the younger members of the profession,—those whom your generous offer is more particularly intended to influence.

These "Practical Papers" would present opportunities for illustrating problems in construction, sanitation, and ventilation; devices affecting the comfort and convenience of our buildings; the application of iron to architecture; the concrete and terra-cotta questions, and other matters of which we, as architects, are expected to know something. J. J. L.

#### MISCONCEPTIONS REGARDING THE THEORY OF COLOUR.

SIR,—There already stated that my vocation is not to revise the incorrect language of writers upon the theory of light, but the erroneous conclusions that creep into teaching from the use of such language. Sir John Herschel, in a letter to Dr. Ernest Brücke, describes the prevailing opinions about light and colours as "*idola*," which, from a jargon, have fixed themselves into a doctrine. It is the boast of sciences that it uses precise language. Science always becomes of greater practical utility as it becomes more exact in theory and precise in its language. I know full well how difficult it is, more especially on the subject of colour, to substitute scientific language for the language of our misleading impressions. But because it is difficult, is the real reason why the difficulty should be conquered.

Mr. Croce, in his last letter, again shows that he has not yet fully comprehended the consequences of admitting that colours are sensations. He speaks of complementary colours when there are none. Colours are but the phenomena, the effects,—the *termini* quid,—of vibratory action, and the sentient, and utterly passive. If there be complementarities these must be vibrations; but, even then, the vulgar hypothesis of "complementaries" will not hold water if as believed by scientists, as it is popularly understood, could only be consistently carried out on the old blue, red, and yellow notion, to which Mr. Croce possibly alludes. "Complementaries," "primaries," "secondaries," &c., belong to that jargon, as Sir John Herschel terms it, which, though not yet extinct, must ultimately die out, or be used with an entirely different connotation. W. C. T.

\* \* We are evidently making no way in this discussion, and we must, therefore, here end it for the present.

#### ASHBURNHAM HOUSE.

SIR,—In your note referring to the above, in connexion with the Society for Photographing Relics of Old London, you mention the staircase, &c., as being the work of Inigo Jones. I and many others have always accepted this tradition; but I see that the *Athenaeum*, in a similar notice as to the photographs, says these works are "erroneously" attributed to Inigo Jones. Will some of your correspondents give your readers the benefit of any information they may have of this interesting work? G. J.

#### VERMIN.

SIR,—I once abolished bugs from a house where they swarmed, and procured a remarkable freedom from fleas, by the following process.—Every crack and interval in and between timbers I filled up with putty (drying, skirting-boards, inside closets, &c.), and every crack in the plaster I filled up with plaster of Paris.

Where do the fleas come from? I have known a dead cat in the garden fill the house with them.

J. EDGAR.

**Fall of a Mill Chimney at Mossley.**—A new chimney at Messrs. Bottomley, Hyde, & Co.'s cotton-mill has fallen. About 40 ft. of the chimney, which was at least 2 ft. 6 in. thick, had been erected. Mr. Abraham Wood, of Stalybridge, was the contractor, and the work was to have been completed in about a week. The cause of the accident was a subsidence of land at the base of the erection. Fortunately no persons were injured.

#### LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

The annual meeting of the London and Middlesex Archaeological Society was held in the Council-chamber, Guildhall, on Wednesday last, when the chair was taken by the Lord Mayor.

Mr. Alderman Hanson, F.S.A., read "Some remarks upon Sir William Ashurst, who was Lord Mayor of London in the year 1694." After the reading of this paper, the Lord Mayor was obliged to leave, and the chair was then taken by the president of the society, Lord Talbot de Malahide.

Mr. Horace Jones the City Architect, read a paper on the Guildhall which was built shortly after the national building, Westminster Hall, during the reign of the last of the Plantagenet kings. The second building was erected in the twentieth year of the reign of Edward II. The present is the third building. It is 34 ft. wide and 89 ft. in height from the pavement to the roof, the collar beam of which is 29 ft. in length, and was cut from a piece of timber 2 ft. 8 in. square.

Mr. Robert Dicksee, curator of the works of art, gave an account of the various paintings and sculptures.

Sir J. B. Monckton (town clerk) read an account of the charters and early records of the corporation, who possess about a hundred ancient charters and records, the oldest and shortest of which was one given to the City by William I.

In another room Mr. B. Scott (the Chamberlain) showed a very ancient crystal sceptre set with gold, and other articles of interest, and Mr. J. A. Brand, Comptroller, showed a number of very interesting seals, public and private, the earliest dating from the time of Richard I., 1189, the time of the first Lord Mayor. In the museum Mr. J. E. Price, F.S.A., gave some account of the principal antiquities preserved therein.

In the library Mr. W. H. Overall, F.S.A., gave an account of the present condition of the collection of books. There are now some 60,000 works in the library.

After having examined some of the treasures of the library, the company proceeded to the Church of St. Helen, in Bishopsgate-street, where they inspected the tombs of the Crosbyes, of Sir Thomas Gresham, and of others. In the evening the annual dinner took place in Crosby-hall, where the chair was taken by General de Hayland, York Herald.

#### CHURCH-BUILDING NEWS.

**Hull.**—The foundation-stone of the new Church of St. Philip, Hull, has been laid by the Bishop of Tasmania. The building is being erected on a site lately occupied by a warehouse, and will have frontages to Charlotte-street, Paradise-row, and Mason-street. The site is very irregular in shape, and necessitates a comparatively short nave and special treatment of plan. The church will be placed with its axis north and south (instead of east and west, as usual), the chancel facing Charlotte-street. The plan shows a nave of 66 ft. long by 27 ft. 6 in. wide; a west aisle 18 ft. 6 in. wide; and a chancel 31 ft. long by 23 ft. 3 in. wide. The church will be of lofty proportions, the ridge of the nave roof being 58 ft., and that of the chancel 50 ft., above the floor. The building will be faced externally with red stock bricks, with stone dressings, and will be roofed with green slates. The interior will be plastered, but the arches and string-course will be of red brick. The nave will be lighted by two lofty two-light traceried windows in the north gable, with a traceried circle over; by seven long lancet windows in the east wall; and by clear-story lancet windows on the west side. The nave will be divided from the aisle by an arcade of four bays. The chancel will be terminated by a semi-circular apse. A bell-turret will be carried up over the porch at the south end of the nave (facing Paradise-row), and roofed with a high-pitched hipped roof, with wrought-iron cresting and cross on the ridge, which will be 75 ft. above the street. The clergy and choir vestries will be at the south end of the chancel. Accommodation will be provided for 450 persons. The architects are Messrs. Botterill, Son, & Bilsen, of Hull, and the whole of the works are being executed by Mr. R. Sargeant, of Wright-street, Hull, the amount of whose contract is 3,488*l.*

**Birmingham.**—The new church of St. Alban the Martyr, in Conybere-street, has been opened. The church has been erected from the designs of Mr. John L. Pearson, R.A., and has been built by Mr. Shillito, of Doncaster. The church is designed in the style which prevailed in this country during the early part of the thirteenth century, freely treated, and adapted to modern requirements. The plan is cruciform, and consists of a nave and aisles, 82 ft. long and 52 ft. wide internally, the width of the nave itself being 23 ft. 6 in.; western narthex, or portico; north and south transepts, 17 ft. wide, opening into the aisles and eastern bay of the nave, the total length from north to south being 76 ft. The chancel is of the same width as the nave, and 48 ft. long to the extremity of the apsidal termination, and is surrounded by an ambulatory. South of the chancel, and opposite to its three western bays, is a chapel, 36 ft. long and 18 ft. wide. The northern arm of the transept has an eastern aisle, 11 ft. 6 in. wide. East of this, and the width of two bays of the chancel, is the organ-chamber, to the north of which abundant vestry accommodation is provided. South of the western bay of the south aisle is the lower portion of the tower, now carried up some 25 ft., but which is designed to rise about 125 ft., and to have belfry windows, consisting of lancet triplets in two tiers. The lower part of the tower is kept plain, being pierced only with small openings necessary for lights, and ornamented with shallow surface arcading. A low square spire crowns the tower with a cluster of angle-turrets and spire-lights at its base. The total height will be about 170 ft. The cost of this tower will be about 4,000l. Internally, the effect of the church is spacious and open, the piers being as light as is consistent with sound construction. The church is grained throughout. The nave is separated from the aisles by arcades of five arches, and eleven arches surround the chancel, the seven eastern ones being much narrower and more pointed than the others. These arches are about 18 ft. high, with the exception of the two at the crossing, which rise to the full height of the building. The nave, chancel, and transepts are grained at the same height, viz., 50 ft.; the chancel-arch is but very little below the grained ceiling, just sufficient to mark the separation without interfering with the vista. The clearstory windows are very deeply recessed, sufficiently to allow of a passage-way in front of them over the nave and chancel arcades. The south chapel is entered from the transept by a double arch; it is grained at a height of 23 ft. The peculiar arrangement of the graining at the east end of this chapel is worthy of notice. The church is built of the red bricks of the neighbourhood, but especially made of a smaller size than usual. The walls inside are partially faced with stone and partially with the same red bricks, the more prominent parts and the vaulted ceiling being all of stone. Bath stone is used for all dressings, both inside and outside. The roofs are covered with plain red tiles. The church, so far as completed, has cost about 20,000l., and provides room for about 1,000 worshippers.

**Chislehurst.**—The parish church of St. Giles, Chislehurst, has been undergoing renovation for some time past, under the direction of Mr. G. R. Crickmay, the diocesan architect. All, save the chancel part, is now complete. The building is, in the main, Perpendicular Gothic, and consists of nave, south aisle, and porch, north transept, chapel, chancel, and an embattled tower. When the restoration commenced, the main timbers of the roof were found to have entirely rotted away at the places they rested upon originally in the walls, and when the lead above was removed, the roof itself fell in of its own weight, happily without any fatal accident, but showing clearly that, instead of supporting, the timbers had actually been supported by the lead! Very fortunate it was that the lead itself was deeply embedded in the walls. The arcade was upwards of 12 in. out of the perpendicular. This has been put straight, a modern vestry has been removed, and the gallery has followed it. Mr. Beer, of Wareham, was the builder. The floors are of Perbeck stone, bordered with black and red tiles supplied by Mr. Carter, of Poole. The chancel arch has been widened and heightened. Four painted windows are the work of Messrs. Lavers, Barraud, & Westlake, of London, and a series of subjects has been arranged for the windows throughout the building. The stone-carving and sculptured figures are by Mr. Henry

Hems, of Exeter. Mr. Cooper was the contractor's foreman during the works in hand. All is now complete save the chancel, of which designs have been prepared. The church is heated by Porrett's (of Bolton) patent warming apparatus. The expenditure on the works up to the present time is about 1,500l.

**Haverfordwest.**—The Bishop of St. David's reopened the parish church of St. Thomas, in this town, on the 2nd inst., after the addition of an aisle, with organ-chamber, and new vestry and porch on its north side. Other improvements and additions have been made to the church (which, with the exception of the fine tower and a small portion of the north wall of the nave, was rebuilt about twenty-five years ago), including new chancel stalls and fronts, communion-rail, prayer-desk, stone pulpit, chancel-arch, east window filled with Munich glass by Mayer, Porritt's hot-air stove, encaustic tile pavement by Webb, of Worcester, and organ by Voyles & Sons, of Bristol. A large part of the churchyard has also been levelled and drained. The contractor was Mr. W. Reynolds, of Haverfordwest, and the architect Mr. E. H. Lingen-Barker.

**Wandsworth.**—St. Faith's new parish church is about to be erected at Wandsworth. The building will consist of nave, chancel, north and south aisles, organ-chamber, tower and spire, and vestries beneath the chancel, and will be built of Berkshire pressed bricks, with Box-ground stone dressings. The church will accommodate 800 persons. Plans have been prepared by Mr. John Pitt Bayly, architect, Paddington.

**Alverdiscoth.**—The restoration of the parish church of Alverdiscoth, near Barnstable, has been completed by Mr. Harry Hems, of Exeter. The main body of the church was restored in 1866, but for want of funds the chancel and other parts were not touched. The principal feature in the chancel is the new reredos, the gift of Captain W. A. Deane. It is of stone, and occupies the entire width of the east end of the chancel. The central part is formed of three recessed compartments, resting upon a retable of red Corschill stone. The backs of these panels are of the same material. In the central one stands a simple Calvary cross in pure statuary marble. The triple compartments are divided by well-defined buttresses, and ornamented by tracery and carved work. A new three-light painted east window has been put up. It is a memorial to the late Miss Preston, as the inscription records. The subject is "Our Lord in Majesty," and it has been painted by Messrs. Shrigley & Hunt, of Lancaster. The chancel roof has received careful attention. Where the old oak timbers were deficient they have been made good, and new carved bosses have been placed where required. The whole of this roof has been decorated, the panels painted and stencilled, and the bosses gilded. The old carved pulpit has been lowered about 6 in. At the western end of the north aisle a new three-light window, of Bath stone, has been inserted. This is filled with coloured glass.

**Chislehurst.**—Two sanctuary standards, entirely of wrought-iron, undecorated, have just been added to the elaborate fittings of the Church of the Annunciation, Chislehurst. They were designed by Mr. James Brooks, architect, and executed by Messrs. Jones & Willis.

#### DISSENTING CHURCH-BUILDING NEWS.

**Darwen.**—The foundation-stone of a Congregational School Chapel has been laid here. The site is in Blackburn-road, and space has been secured for the erection of a building at some future period to be used as a chapel exclusively. The new building, which will be two stories high, is designed in the Gothic style, the material being local stone, faced with selected porphyries. On the ground-floor will be the large school-room, 50 ft. long, 40 ft. wide, and 16 ft. high. At the end of the large school-room will be the infants' school-room, 40 ft. long, 20 ft. wide, with a staircase enclosed, leading to the next floor, where are three class-rooms, and a room to be used for the time being as a minister's vestry. On the first floor will be a large room which will be used at present as a chapel, extending over the school-room and front entrance. It will be 62 ft. long, 40 ft. wide, and 28 ft. high to the ceiling. This room is divided into nave and side aisles by iron columns, having moulded bases and capitals. These columns support the framed principals of the roof. The chapel is calculated

to accommodate about 400 people. The plans have been prepared by Mr. Henry Pinchock, architect, London. The contracts for the different trades have been let separately to local contractors.

**Govan.**—The memorial-stone of a new United Presbyterian church at the corner of White and Fairfield streets, Govan, for the Greenfield U. P. congregation, was laid on the 4th inst. The plans of the new church have been prepared by Mr. T. L. Watson, architect, Glasgow. They show accommodation for 600 persons, or, if galleries be introduced, for 800. Of the Gothic style, in one of its more simple types, the church is divided into nave and aisles, but it is without clearstory. There is also a hall, giving accommodation for 300 persons, together with session-house, vestry, &c. The contractors for the work are:—Mason work, Messrs. Gow & Stobo; Wright work (without side galleries), Messrs. M. & W. Reid; plumber work, Mr. M. Craig; slater work, Mr. Wm. Darrig; and plaster work, Mr. D. S. Hutcheson. These contracts represent a total sum of 2,200l. Including ventilation, gas fittings, furniture, and everything else required for the completion of the edifice, the whole cost will not exceed 3,000l.

**Halifax.**—The memorial stone of a new Primitive Methodist Chapel and school at Greenland Wall Nook, near Halifax, has been laid. Mr. W. H. D. Horsfall is the architect. The buildings are in course of erection by the following contractors:—Masons' work, Mr. Thomas Noble, Greetland; joiners' work, Mr. Ed. Schofield, West Vale; slaters' and plasterers' work, Mr. J. Hitehen, Norland; plumbers' work, Mr. J. Stafford, Sowerby Bridge; painters' work, Messrs. E. Whitehead & Co., Sowerby Bridge. The total cost will be about 700l.

**Walworth.**—Walworth-road Baptist Chapel has been re-opened, after re-decoration and other works, which have cost 650l., and have been carried out by Mr. William Sayer, of New Kent-road, under the direction of Mr. J. E. Sears, architect.

**Newport-Pagnell.**—A new chapel for the Congregationalists has been opened here. It is Early Gothic in style, the materials used externally being red bricks with Bath-stone dressings. The architect is Mr. John Salaman, of London, and the works were carried out by Messrs. Wilford & Son, a local firm, whose contract was for 1,724l.

**Ross.**—The memorial stone of a new Baptist Chapel at Ross, Herefordshire, has been laid. The plans have been prepared by Mr. G. C. Haddon, architect, Hereford. Mr. Kemp, of Ross, is the builder.

#### ROMAN CATHOLIC CHURCH-BUILDING NEWS.

**Carfin.**—The new church of St. Francis Xavier, at Carfin, N.B., has been commenced. The architects are Messrs. Pugin & Pugin, of Westminster.

**Glasgow.**—The new Franciscan church, which has been in course of erection for a little over a year, was opened on Wednesday, the 1st of June, in the presence of Cardinal Manning. Messrs. Pugin & Pugin, of Westminster, are the architects. It is in the Early Decorated style, severe in treatment, in harmony with the austere rules of the Franciscan order. Mr. John Devlin, of Glasgow, was the contractor, and Brother Patrick, a member of the order, has acted in an efficient manner as clerk of works.

**The late Mr. W. Burges, A.R.A.**—The will (dated Feb. 15, 1879) of Mr. William Burges, late of No. 9, Melbury-road, Kensington, architect, who died on April 20 last, was proved on the 23rd ult. by Richard Popplewell Pellan, Joseph Henry Christian, and John Starling Chapple, the executors, the personal estate being sworn under 40,000l. The testator leaves to the British Museum such manuscripts and antiquities as the authorities may select; to the Marquis and Marchioness of Bute such object of art designed by him as they may respectively select; upon trust for his clerk, Mr. J. S. Chapple, for life, and then for his wife for her life, 4,000l.; and legacies to pupils, clerks, and others. Two-thirds of the residue of his real and personal estate are to be held upon trust for his sister, Mrs. Mary Leechall Pellan, for life, and then for her husband for life; and, subject to such life interest, he gives the said residue to his nieces, Elizabeth Burges and Eleanor Burges.

## SCHOOL-BOARD SCHOOLS.

**Gateshead.**—At a recent meeting of the Gateshead School Board, the contract for the erection of schools on a site adjoining Durham-road was let to Mr. Alexander Thompson for 3,728*l*. These schools are somewhat of a departure from the usual type of Board schools hitherto erected in this district, being designed to meet the growing demand for class-rooms. Accommodation is at present provided for 707 children in three departments, for boys, girls, and infants. The building will be two stories high, and every class will practically have a room to itself. The head-master will, without leaving the main room, have complete supervision of the whole school, thus enabling a considerable portion of the work to be carried on by pupil teachers. Each department will consist (in the case of the boys' and girls' schools) of four class-rooms and one large room for collective purposes, which will be capable of a temporary sub-division, if desired, into two larger class-rooms. Thus both the girls' and boys' school may be said to consist each of six class-rooms of various sizes. All these rooms are so arranged round the two main staircases as to have independent means of ingress and egress. Private rooms for the teachers, cap-rooms and lavatories for the children, and other customary accessories, are provided. The building will be carried out with 20-in. hollow brick walls with 2-in. air cavity. The whole of the walls, including offices and boundary walling, will be faced with Sherburn bricks. The ventilating tubes are arranged to supply a minimum of 300 cubic feet per hour for each child, entirely independent of doors and windows, and without draughts. The amount of the contract includes the caretaker's house and boundary walls. To give the Board a true idea of the ultimate cost per child, the architects have gone carefully into the cost of some contemplated extensions, and find that, provided they are carried out at the same prices as the present contract, the total cost for 927 children will be 4,006*l*., or 4*l*. 6*s*. 5*d*. per child. The architects are Messrs. Oliver & Leeson, of Newcastle.

**Plymouth.**—The Mayor of Plymouth has opened the new Palace-court Schools, which have been erected by Messrs. Lupton & Goad, contractors, from the designs of Mr. H. J. Snell, architect. The schools have been specially designed for the adoption of "dual" desks. Accommodation is provided for three departments,—boys, girls, and infants,—and each department consists of one principal schoolroom and four class-rooms, besides the necessary offices. The boys' department is on the first floor; the department for the girls and infants occupies the whole of the ground-floor. All the apartments are fitted with Boyle's patent ventilators. They are well lighted, and when the weather necessitates the closing of windows there are ventilators in the window-sills to be opened. Each room contains a slow-combustion grate. On the floor above the boys' department there are apartments for the caretaker of the school, who is thus enabled to live on the premises. Macfarlane's enamelled lavatory ranges have been fitted. The boys' offices are also fitted with a new system of range by Macfarlane. Allowing 8 ft. superficial for each child, the minimum permitted by the Education Department, the schools are capable of accommodating 952 children. The number, however, for which the schools have been passed by the Inspectors of the Department, is 247 boys, 288 girls, and 257 infants,—a total of 792. The area of the entire site is about 12,000 ft., and cost 4*s*. 2*d*. per foot. The main school-room in the boys' department is 49 ft. 6 in. by 22 ft. 6 in., with four class-rooms ranging from 20 ft. to 22 ft. by 18 ft.; the girls' school-room is 63 ft. by 22 ft., with four class-rooms 20 ft. by 18 ft.; the infants' school-room is 30 ft. by 28 ft., with four class-rooms ranging from 22 ft. to 16 ft. by 16 ft., the total giving a superficial area of 7,622 square feet. The expenditure on the site alone has been just 2,600*l*. The cost of building has been 4,527*l*.; the estimated cost of furniture is 400*l*.; architect's commission, salary of clerk of works, and other expenses of superintendence, have absorbed 400*l*., and incidental expenses 100*l*., making a total of 8,027*l*. The cost per head has been put down at 5*l*. 5*s*. for the building, and 2*l*. 13*s*. for the site, making altogether 7*l*. 18*s*. The average of all the schools constructed by the Board is 7*l*. 17*s*. per head.

**Haltwhistle.**—The proposed Higher Board School,

which is to be erected from the plans of Mr. Richard Horsfall, architect, George-street, will be situate between Prescott-street and Oxford-road, it having been proposed to make a new street connecting the two roads, along which the main front of the building will face, the frontage being towards Beacon-hill. The total length of the building will be 209 ft. by 66 ft. Owing to the narrowness of the site, considerable difficulty was experienced in obtaining the proper accommodation. The basement is devoted to boys' and girls' covered playgrounds, cooking kitchen, laboratory, chemical stores, heating apparatus, and other office arrangements; and the keepers' residence, comprising two bedrooms, living-room, and large cellar. The playgrounds can be approached under cover. The length of the laboratory is 26 ft. 8 in.; and the cooking kitchen, in which it is proposed to give lessons in cookery in connexion with the girls' department, will measure 26 ft. 3 in. by 24 ft. 8 in. The ground-floor proper will be devoted to the general educational purposes, and is divided in the centre by a corridor 204 ft. long by 10 ft. 6 in. wide, on each side of which are arranged the class-rooms, twelve in number, the sizes of which are 22 ft. by 20 ft., and 24 ft. 8 in. by 22 ft. A novelty in connexion with these class-rooms is that each room is provided with its separate cloak-room, immediately adjoining and opening into the class-room, thus enabling the teacher to have perfect control over the distribution and safe keeping of the wearing apparel, and also preventing the confusion which has hitherto been experienced when one cloak-room is provided to accommodate the whole of the departments. The first floor is set apart for an assembly-hall, 109 ft. by 32 ft., having retiring-rooms at each end, 20 ft. by 18 ft., and including a book store for each department. There is somewhat of novelty in the manner in which the assembly-hall is made, being formed in the roof of the building, which is lighted by a clearstory, very similar to the plan adopted in church architecture, the walls being wainscoted with panelled framing, to the height of 8 ft. The part of the building that in a church would be the side aisles is in this case devoted to the class-rooms. The large room is approached by a separate staircase at each extremity of the large hall, which enables the boys and girls to enter and leave at opposite ends. The style of the building is "Queen Anne." The estimated cost is 4,700*l*., exclusive of the playgrounds, boundary walls, &c. The building will be heated by a low pressure hot-water apparatus.

## STAINED GLASS.

**Westminster Chapter House.**—It is proposed to complete Sir Gilbert Scott's design for the restoration of the Chapter-house. The six great windows, with one smaller window over the entrance, are to be filled with stained glass representing the history of England as associated with Westminster Abbey during the six centuries in which the Chapter-house was connected with the historical interests of the country. The cost will be 6,000*l*. The first of these windows, which is already in progress, will be supplied at the cost of the Dean of Westminster, and it is hoped that the public will subscribe the cost of the other windows, as the Government, the owners of the building, have refused to defray the cost of the windows, which will, we understand, be executed by Messrs. Clayton & Bell.

**Heptonstall.**—St. Thomas's Church has just received an addition in the shape of a stained glass window, which has been erected at the expense of Mr. John E. Greenwood, Glen House, Cragg, in memory of his wife. The window has been executed by Messrs. Mayer & Co., Munich.

**Handsworth.**—A memorial window has just been placed in the south aisle of Handsworth parish church. Messrs. Burlinson & Grylls, of London, have executed the work, from designs suggested by the Rev. W. Randall, the rector. The window consists of three lights, on which are painted, in the centre, "The Raising of Lazarus"; on the left, "The Sisters of Bethany,—Mary at the Feet of Jesus"; and on the right, Christ, after His Resurrection, giving a commission to Mary Magdalene to go and tell His Disciples of His Ascension. Medallions of Faith, Hope, and Charity fill up the lower parts of the window.

**Burnham (Essex).**—A three-light window has just been placed in the south side of the chancel of the parish church to the memory of the late

Mr. and Mrs. Hawkins, of Capola House, by Messrs. Clayton & Bell, of Regent-street. The subject represented is that of the Ascension. The ascending figure of the Saviour is surrounded by a choir of angels, while grouped beneath are the eleven apostles. This is the fourth memorial window recently placed in the church.

**Matlock.**—Two stained glass windows have just been placed in the north aisle of the parish church, to the memory of the late Mrs. Greaves, of The Rocks, Matlock Dale, and of the late Mr. Brook Leacroft, of Matlock. In the first is the figure of Christ, as the "Good Shepherd." The second window is from the well-known picture of Holman Hunt, "Christ, the Light of the World." The subject has been treated by Messrs. Powell, of Whitefriars, London.

**Swaffham.**—The parishioners of Swaffham have just presented to the parish church a window of stained glass, executed by Messrs. Heaton, Butler, & Bayne, of Garrick-street, Covent-garden. The window is on the north side of the church.

## Miscellaneous.

## Tenders for Instalments of Works.

At a meeting of the Surveying Committee of the Bath Town Council on the 13th inst., a communication was received from Mr. R. Mann, of Charlotte-street, complaining of the action the committee had taken with respect to the wood-paving of Milcom-street, in advertising for tenders for the same. [Not long ago, he said, in response to their advertisement, in conjunction with Mr. Welch, he tendered for laying Union, Burton, and Milcom streets with wood. He was asked to do the two former streets and consented. Somewhat unfairly the committee were now asking for tenders for Milcom-street. In all fairness, he urged, he was entitled to the offer of the work whenever they wished it to be done. After mentioning that it was the custom of the trade that when work was once tendered for the estimates were held to, he pointed out that his price, having been already before them, it was of course well known to others, who had simply to go a little below to take the job.—A short discussion ensued, some members holding with Mr. Mann that he was entitled to the work in Milcom-street, others contending that the committee were acting strictly within their right in soliciting fresh tenders. In answer to questions the Clerk stated that the advertisement was for the three streets, but the contract eventually entered into was for the two (Union and Burton streets) only. The contract was sent for, and also the minute of the meeting at which it was considered. The terms of the latter were "Resolved that the tender of Mr. R. Mann be accepted with respect to Union and Burton streets only." After the reading of this the committee decided to consider the tenders received in answer to the advertisement lately inserted. These were six in number, each tenderer quoting prices for carrying out the work in two different ways. Eventually the committee accepted the tender of Mr. J. T. Welch, of Twerton-on-Avon, at 9*s*. 10*d*. per yard.

## The Condition of the Regent's Canal.

Dr. Danford Thomas, the coroner for Central Middlesex, has received information of the discovery in the Regent's Canal, near Albert Bridge, of the body of a female, which had been found floating by the police. They had called for the assistance of Dr. Job Collins, who said that life was extinct, and that the body had not been in the water very long. He could not venture to say that the death was simple suffocation by drowning, for the fact was that the waters of the canal were impregnated with animal refuse to such an extent that not only was the canal a nuisance to the inhabitants residing near it, but was positively dangerous to any one accidentally falling in, for he or she would suffer, if not die, from the poisonous state of the water.

**Building Accidents in Rome.**—A correspondent from Rome says a question was asked in the Chamber last week respecting the repeated accidents to workmen in buildings in course of construction. Signor D'pretis agreed in soliciting an early discussion of the Bill for the prevention of such occurrences.

**The Artists' Benevolent Fund** holds its seventy-second anniversary dinner on the 2nd proximo, Mr. Mandell, M.P., in the chair.

**Artisans' and Labourers' Dwellings.**

The Select Committee of the House of Commons appointed to consider the working of the Artisans' and Labourers' Dwellings Improvement Act, 1875, and the Amending Act of 1879, with the view of considering how the expense of, and the delay and difficulty in carrying out, these Acts may be reduced, and also of inquiring into any causes which may have prevented the reconstruction of dwellings for the artisan class to the full extent contemplated and authorised by these Acts, and of recommending such amendments as may be most expedient for carrying out the full intention of these Acts; and also to consider the working of the Metropolitan Streets Improvements Acts, has commenced its inquiry. Sir R. Cross presided, and the other members of the Committee were:—Mr. Courtney, Lord Esmyn, Mr. Hastings, Sir H. Holland, Mr. W. Holmes, Mr. Leamy, Sir J. M. G. Hogge, The O'Donoghue, Mr. S. W. Ridley, Mr. Torrens, Sir S. Waterlow, Mr. A. Balfour, Mr. Brand, Mr. Brodick, Mr. Bryce, Mr. F. Buxton, and Mr. Cropper. In opening the proceedings Sir R. Cross said he proposed to call the medical officers of those districts where schemes had been suggested and carried out by the Metropolitan Board, Mr. G. A. Rogers, medical officer for the Limehouse district, gave evidence with reference to the Nightingale-lane scheme and the Brown Bear-alley scheme. Dr. Tidy, Medical Officer of Health for Islington, gave his evidence on Monday.

**South Central Africa.**—Mr. F. C. Selous, whose achievements as a hunter of elephants and other big game have already been publicly mentioned, has communicated to the Transactions of the Royal Geographical Society two papers, "Journeys in the Interior of South Central Africa," and "Recent Explorations in Meshunaland," which include sketch-maps of his route, and form a distinct addition to our geographical knowledge of the interior. Mr. Selous, who has shown remarkable enterprise and determination in his explorations, is preparing, we are glad to hear, a popular account of his travels and adventures, which will doubtless soon find a publisher.

**The Sacred Capital of the Hittites.**—Lieut. Conder, R.E., the officer in charge of the Expedition for the Survey of Eastern Palestine, while waiting at Beyrout for the arrival of his instruments, has made a short journey into the north of Syria. He visited Hama (where he found a Greek inscription), Kalat-el-Hosn, Tripoli, Baalbec, and other places. He announces that he has found on the shores of Lake Kades, an almost unvisited lake, south of Hama, through which the river Orontes flows, "the sacred capital of the Hittites." He promises further particulars by an early post, as soon as he gets his notes together. The Hittites were defeated and their city "Ketesh" destroyed by an Egyptian king, about 1340 B.C.

**Boiler Explosions.**—Models greatly assist in explaining the effects and causes of boiler explosions. A selection from the numerous models, used at inquests or scientific meetings, by Mr. E. B. Martin and other officers of the Midland Steam Boiler Inspection and Assurance Company, have been placed within the reach of those engineers having the care of boilers in various centres of industry in England, and also in Europe and America. They are now placed for a few months in the basement of Mr. Martin's office at 4, Storey's Gate, Great George-street, Westminster, and may be seen, on application there, either during the day or in the evening.

**A large new Clock** has been placed in the parish church at Ashover, Derbyshire. It strikes the hours chimes the Cambridge quarters on four bells, and shows time on a skeleton dial, 4 ft. 6 in. diameter. The work has been carried out by Messrs. Smith, Midland Steam Clock Works, Derby. A new clock has been erected in the new cemetery, Intake-road, Sheffield. It strikes the hours upon a 17 cwt. bell, and is also from Messrs. Smith.

**International Medical and Sanitary Exhibition.**—The committee are sparing no pains to promote the success of this exhibition; and, to judge from the admirable plans which have been issued to exhibitors, the collection of medical and sanitary appliances, to be opened under the auspices of the Parkes Museum of Hygiene at South Kensington on July 16th will be of national importance.

**Artists' General Benevolent Institution.** The Council acknowledge the receipt of 50l. from Admiral Carr-Glynn, under the will of the late Miss Adelaide Neilson.

**Dangerous Employments.**

—The Court of Appeal, sitting at Westminster on the 16th inst., decided the case of "Dudley v. Brown," one of some importance to persons engaged in occupations involving personal risk. The action was brought by a workman of the defendant employed, with several others, under a foreman, to load a ship, lying in the West India Docks, with iron. The iron was lowered by chains worked by a winch, and the chains were fetched by the men from a donkey-engine barge when required. A chain broke, and plaintiff was knocked down, and severely injured by the falling metal attached to the chain. He recovered damages from his master, the defendant, at the trial, before Mr. Justice Stephen, on the ground that defendant's foreman knew of a defect in the chain, and an appeal by the defendant to the Divisional Court was unsuccessful. It was now argued that the foreman was a fellow-workman of the plaintiff; that the defendant had not provided the chain, and was not liable. Their lordships allowed the defendant's appeal, Lord Justice Bramwell suggesting that the men should themselves use due caution, and Lord Justice Brett being of opinion that the foreman was not a vicar-master, but a fellow-workman.

**Framing Specifications.**—An esteemed correspondent writes:—I see the Architectural Association had under consideration the other day the question of classes for construction, drawing up specifications, &c., and it may be worth while to mention that they would find Professor Donaldson's "Handbook of Specifications" useful as a text-book and suggestive of topics.

**Messrs. Hayward Tyler & Co.** are giving attention to improving the style of ornamentation for sanitary earthenware. Their new registered "Blue Dragon" pattern, copied from Oriental china, is applicable to wash-basins, valve-cock basins, Hayward Tyler & Co.'s new hopper basins, &c. It is printed in Oriental blue, and covers the surface very satisfactorily.

**Not Dear.**—At a joint meeting of the Town Council and Trustees of the Great Torrington Town and Alms Lands, held on Thursday in last week, Mr. W. C. Medland was unanimously elected surveyor to the said Trustees, at a salary of 20l. per annum.

**The City Memorial to Lord Beaconsfield.**—The City Lands Committee, who are about to erect a memorial in the Guildhall to the late Lord Beaconsfield, have decided to intrust the work to Mr. R. C. Belt, having chosen his bust after inspecting various others.

**Royal Polytechnic Institution.**—Mr. W. Mattie Williams, F.R.A.S., author of "The Fuel of the Sun," "Through Norway with a Knapsack," &c., has been appointed to the management of this Institution, and commences his duties forthwith.

**Fall of a Bell.**—Whilst being rung in a wedding peal, the big bell in the Minster tower, Wimborne, fell, but, luckily for the ringers, got wedged in between two beams in the first floor it came to. The fallen bell is more than a ton and a half in weight.

**Malbourne Exhibition.**—A first-class award has been given to Messrs. Craven, Dummell, & Co., of Jackfield Works, Ironbridge, Shropshire, for encaustic and decorative tiles.

**Art Gallery for Birmingham.**—The foundation-stone of the new Corporation Art Gallery is fixed to be laid by the mayor of the borough, Mr. R. Chamberlain, on July 19.

**Masons' Wages at Ayr.**—The master masons of Ayr have agreed to concede the demand of their men for an advance in their wages of 1d. per hour. The wage is now 6 1/2d.

**The Royal Academy Conversazione** is fixed to take place on Wednesday, July 6th.

**TENDERS**

For the erection of five houses and shops in the Kentish Town-road, for Mr. W. B. Rodger, Messrs. Wm. Wallace & Pochart, architects. Quantities supplied by Mr. Frederick Thomson:—

E. White .....	£2,840 0 0
Macey & Sons .....	4,915 0 0
J. R. Hunt .....	4,923 0 0
E. Toms .....	4,435 0 0
P. S. Robertson .....	4,421 0 0
Dorring & Sons .....	4,353 0 0

For the erection of school-chapel at Masham, Derbyshire, for the Bishop of Nottingham, Mr. C. G. Wray, architect. Quantities by Messrs. Linsell & Giffard:—

Trusell .....	£380 10 0
H. Smith .....	822 13 6
H. Slater .....	832 15 6
Lilley & Sons .....	825 0 0
Law & Smith .....	811 0 0
W. Smith .....	798 0 0
Beckworth & Sons (accepted) .....	776 0 0

For the erection of drying lofts and sheds at Petrock-stoke, North Devon, for Messrs. G. & C. Adams, Mr. W. C. Medland, architect:—

Handford & Sheppard .....	£157 0 0
Grant (accepted) .....	148 10 0

For making up the Grove-road at Wanstead, Essex:—

J. Cardus, Acton .....	£390 0 0
J. Richards, Wanstead .....	256 0 0
G. G. Ratty, Bromley-by-Bow .....	199 0 0
J. Jackson, Upton .....	157 8 0
* Accepted.	

For new billiard-room and additions to premises, for the North London Working Men's Club and Institute, Collier-street, Pentonville. Mr. Sheppard, architect. Quantities not supplied:—

Bridgman .....	£256 0 0
Davey .....	220 0 0
Weaver .....	198 10 0
Aylett .....	133 0 0
Alard .....	138 0 0
Snow (accepted) .....	128 0 0

For villa residence at Buckhurst-hill, for Mr. W. Guppy:—

Liger, Poplar .....	£1,690 0 0
Harper, Hackney .....	280 0 0
North Bros., Stratford .....	1,405 0 0

For new lodge and approaches to Bleanings Hall, Hallow-hill, for the Trustees of the late Mr. Edward Joyce. Mr. William Glover, architect, Newcastle-upon-Tyne:—

Walter Scott, Newcastle .....	£2,419 16 7
-------------------------------	-------------

For pile-driving, &c., required in the extension of Ballast Bank, Portmadoc Harbour. Mr. Thos. Roberts, engineer:—

Davies, Wanslaw .....	£812 0 0
Morris, Carnarvon .....	477 0 0
Fritchard, Portmadoc .....	434 0 0
Owen, Portmadoc .....	430 0 0
Hughes, Portmadoc .....	424 0 0
Greene, Portmadoc .....	423 0 0
Williams, Carnarvon .....	416 0 0

For alterations at the Park Tavern, Tollington Park, for Mr. Anderson. Mr. John Viner, architect:—

Marr (accepted) .....	£450 0 0
-----------------------	----------

For finishing houses at North Kensington, for Mr. E. P. London and Mr. Geo. H. Tatham, in accordance with the original contract, Messrs. Ebbetts & Cobb, architects:—

Cowland Bros. ....	£347 0 0
J. Williamson .....	280 0 0
T. Handover .....	223 0 0
Langer & Penhnam .....	208 10 0
Steel Bros. (accepted) .....	190 0 0

For three houses, Holmeads-road, Bromley, Kent. Mr. John Sulman, architect:—

Smith .....	£3,353 0 0
Taylor & Son .....	3,200 0 0
Jones .....	3,157 0 0
Arnold .....	3,116 0 0
Knight .....	3,114 0 0
Crosley .....	2,989 0 0
Smith .....	2,847 0 0
Balding .....	2,773 0 0

For rebuilding premises, Watling-street, Messrs. Ford & Heath, architects:—

Patman & Fotheringham .....	£2,508 0 0
T. H. Adamson & Sons .....	2,420 0 0
Simpson & Son .....	2,407 0 0
E. Conder .....	2,364 0 0
Peto Brothers .....	2,346 0 0
W. Brass .....	2,321 0 0
E. Lawrence .....	2,297 0 0
Asby Brothers .....	2,195 0 0
Perry & Co. ....	2,072 0 0
Scriveners & Co. (accepted) .....	1,998 0 0

For various repairs to houses at Kentish-town, for Mr. F. W. Rowney, Messrs. Ebbetts & Cobb, architects:—

Steel Bros. (accepted) .....	£154 7 6
------------------------------	----------

For alterations, additions, and improvements to school buildings, for the Nettledale School Board, Oxon. Messrs. Morris & Stalwood, architects:—

J. Walter .....	£2,775 0 0
C. Clements .....	2,959 0 0
Hardy .....	2,836 0 0
Holly & Butler .....	2,977 10 0

For new bank at Brentford, Mr. Henry S. Legg, architect:—

	Bank.	Fittings.
Adamson & Sons .....	£2,833 .....	£116 .....
W. Brown .....	2,700 .....	120 .....
C. P. Keadley .....	2,630 .....	149 .....
T. Nye .....	2,622 .....	88 .....
F. Taylor .....	2,502 .....	99 .....
T. Beauchamp .....	2,497 .....	80 .....
A. & B. Hanson .....	2,480 .....	110 .....
G. Gibson .....	2,455 .....	90 .....
T. Brunsden .....	2,418 .....	115 .....

For the enlargement of the hall and other additions to the Royal Masonic Benevolent Institution, Croydon, Mr. Robert Griggs, architect:—

E. Kerry .....	£1,407 0 0
J. Linsell .....	1,296 0 0
M. Taylor .....	1,227 0 0
J. Holliday .....	1,147 0 0
J. Ailey (accepted) .....	1,092 0 0

For house and offices in Sandal-road, New Malden, Mr. Henry W. Beale, architect. Quantities not supplied:—

Goddard & Sons, Faraham .....	£1,679 0 0
Palkner, London .....	1,487 0 0
Walker, New Malden .....	1,457 0 0
Rice, Stockwell .....	1,442 0 0
* Accepted subject to reductions.	

For alterations and additions to a dwelling-house and shop, Torrington, North Devon, for Mr. E. Barrett, Mr. W. C. Medland, architect:—

Grant .....	£147 0 0
Handford & Sheppard (accepted) .....	140 0 0

For the erection of pavilion and south-west entrance-lodge, together with gates and fencing, to the Abbey Park, Leicester. Mr. J. Tait, architect:—

Bass .....	£2,319 10 0
Barrett .....	2,062 1 0
Hutchinson & Son .....	2,066 0 0
Gilbert & Pipes .....	2,039 10 0
Major .....	2,020 7 0
Ellett & Son .....	2,008 4 0
Jewsbury .....	2,000 0 0
W. H. Kellett .....	1,958 15 0
H. Heritt .....	1,957 15 0
Stark .....	1,950 7 9

For the erection of a Wesleyan Chapel, Rodney-road, New Kent-road. Mr. Chas. Bell, architect. Quantities by Mr. H. Lovegrove:—

	Red Bricks.	Stocks.
Niblett .....	£4,774	£4,724
Drake .....	4,747	4,737
Good .....	4,723	4,723
Castle .....	4,688	4,688
Woodward .....	4,600	4,607
White .....	4,500	4,500
Downs .....	4,550	4,500
Batley .....	4,500	4,476
Eldridge .....	4,480	4,450
Tyerman .....	4,400	4,400
Higgs .....	4,398	4,368
Marsland .....	4,391	4,351
Tarrant .....	4,363	4,313
Johnson .....	4,339	4,222
Gregor .....	4,137	3,987
Hickinbotham .....	4,087	4,087

\* Stock facings accepted.

For new stables at Walthamstow, for Messrs. B. M. Tate & Sons. Quantities supplied by the architect, Mr. Peter Watkins:—

	Building.	Paving.
Conder .....	£575	420
Scribner & Co. ....	537	135
Beale .....	515	131
Reed .....	515	126
Crab .....	480	147
Pritchard (accepted) ..	525	95

For the erection of Sailors' Rest and adjoining shop in Commercial-road, Portsmouth, Hants, for Miss Weston and Miss Wint. Messrs. Davis & Emanuel, architects. Quantities supplied by Mr. H. P. Foster:—

R. H. Roberts, Portsmouth .....	£5,285 0 0
W. Ward, Portsmouth .....	5,013 0 0
W. R. & C. Liph, Portsmouth .....	4,591 0 0
G. Burbridge, Portsmouth .....	4,555 0 0
T. C. Cooper, Portsmouth .....	4,180 0 0
H. & W. Evans, Portsmouth .....	4,190 0 0

For erecting residence, Bromley, Kent, for Mr. R. V. Perkins. Mr. Geo. Sherrin, architect. Quantities by Mr. Chas. E. Blomfield:—

J. & J. Greenwood .....	£3,570 0 0
Balding .....	3,261 0 0
McLachlan & Son .....	3,789 0 0
Payne .....	3,770 0 0
Crosby .....	3,741 0 0
Grover .....	3,743 0 0
Roberts Bros. ....	3,708 0 0
Falkner .....	3,696 0 0
Syme & Duncanson .....	3,658 10 0
Jerrard (accepted) .....	3,428 0 0

For the erection and completion of St. Christopher's Industrial Dwellings, Barrett's-court, Wigmore-street. Contract No. 2. Mr. E. Hoole, architect:—

Henry & Wallace .....	£8,150 0 0
Lathey Bros. ....	6,417 0 0
Xardley & Sons .....	6,180 0 0
P. Higgs .....	5,525 0 0
W. Smith .....	5,377 0 0
Jas. Holloway .....	4,962 0 0
S. Harradine (accepted) ..	4,511 0 0

For two semi-detached residences, Willoughby Park-road, Tottenham, for Mr. E. Ambler. Mr. C. H. Coal-ville Smith, architect:—

J. Bell .....	£1,375 0 0
Sharp & Eberard .....	1,208 0 0
Jarvis & Sons .....	1,190 0 0
F. Bradford .....	1,180 0 0

Revised Estimate.

F. Bradford .....	985 0 0
Jarvis & Sons (accepted) ..	975 0 0

For rebuilding No. 25, Goudge-street, Tottenham-court-road, for Mr. Carpani. Mr. Josiah Houle, architect. Quantities by Mr. C. G. Mumby:—

Perkins .....	£1,331 0 0
Morter .....	1,183 0 0
Hoath .....	1,138 0 0
Langmead & Way .....	1,068 0 0
Wilson & Exton .....	1,063 0 0

For alterations and additions to Nos. 3, 4, 5, and 6, Great James-street, Bedford-row, for Mr. F. Walters. Mr. C. H. Flack, architect. Quantities not supplied:—

Young, Cochrane, & Fraser .....	£2,140 0 0
Chapman .....	1,993 0 0
Wilson & Exton .....	1,969 0 0
Kilby .....	1,958 0 0
Axford .....	1,947 0 0
Scott .....	1,753 0 0

For alterations at the Orchard tavern, Starch-green, Hammersmith, for Mr. Johnson. Mr. H. J. Newton, architect:—

Gill .....	£257 0 0
Gibbs & Fiew .....	514 0 0
Wood (accepted) .....	498 0 0

New Counter.

Warne .....	£128 0 0
Davidson .....	123 6 0
Sanders (accepted) .....	107 0 0

For roads, 15-in. sewers, and fencing, at Chiswick. Mr. H. Curry, architect:—

Adamson .....	£1,948 0 0
E. & J. Neal .....	1,690 0 0
Jas. Neal .....	1,659 0 0
Neave & Son .....	1,480 0 0
Novell & Robson .....	1,350 0 0

\* For 12-in. pipe only.

For alterations, &c., to "Homeside," Kenley, Surrey, for Mr. A. Johnston. Mr. W. Blaise, architect:—

W. Whiteley, Westbourne-grove ..	£228 0 0
----------------------------------	----------

Two Walnut Bookcases.

B. Cook, Stoncutter-street .....	83 13 0
----------------------------------	---------

\* Accepted.

#### TO CORRESPONDENTS.

"Quantity Surveyors" (a number of letters on this subject shall have consideration next week)—R. T. (what price is used H. J. W. (should take an opinion on the spot. Several points would have to be considered)—A. C. (windows that have existed twenty years cannot be interfered with by new ones)—E. M. B. S. B. C. G. M. F. C. G. W. W. C. H. S. D. S. H. L. B. C. P. W. W. O. H. P. F. W. & E. W. B. J. & W. L. A. F. J. B. J. N. J. H. G. B. H. G. W. H. O. F. S. R. E. W. B. J. L. J. M. & S. S. W. G. S. E. & O. F. T. J. R. H. L. N. M. K. G. T. R. S. & S. W.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication. We are compelled to decline pointing out books and giving addresses. Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

#### CHARGES FOR ADVERTISEMENTS.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADES, AND GENERAL ADVERTISEMENTS.  
Six lines (about fifty words or under) ..... 4s. 6d.  
Each additional line (about ten words) ..... 9s. 6d.  
Terms for series of Trade Advertisements, also for Special Advertisements on front page, Competitive Contracts, Sales by Auction, &c. may be obtained on application to the Publisher.

SITUATIONS WANTED.  
FOUR Lines (about thirty words) or under ..... 2s. 6d.  
Each additional line (about ten words) ..... 6s. 6d.  
REPLIES TO ADVERTISEMENTS.  
Addressed Box — Office of "The Builder."  
Cannot be forwarded, but must in all cases be called for, and the Box Receipt obtained.

THE CHARGE FOR A BOX IS AS UNDER:—  
For "Situations Wanted" Advertisements ..... 2d. per Week  
For all other Advertisements ..... 1d. per Week

PREPAYMENT IS ABSOLUTELY NECESSARY.  
\* Stamps must not be sent, but all small sums should be remitted by Cash in Registered Letter or by Money Order, payable at the Post-office, King-street, Covent-garden, W.C. 6.

DOUGLAS FOUDEBRIER, Publisher.  
Addressed to No. 54, Catherine-street, W.C. 6.  
Advertisements for the current week's issue must reach the office before THREE o'clock p.m. on THURSDAY.

NOTICES, &c. sent at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

#### TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied direct from the Office to residents in any part of the United Kingdom at the rate of 18s. per annum, prepaid. Remittances payable to DOUGLAS FOUDEBRIER, Publisher, 54, Catherine-street, W.C. 6.

Best Bath Stone.  
WESTWOOD GROUND,  
Box Ground, Combe Down,  
Corsham Down,  
And Farleigh Down.  
BANDELL, SAUNDERS, & CO., Limited,  
Corsham, Wilts. [ADVT.]

Box Ground Stone  
Is the best for use in all exposed positions, being a well-known and tried weather stone.  
50,000 feet cube in stock.  
FICOT & SONS,  
Box, Wilts. [ADVT.]

Doubling Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doubling Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset. — Agent, Mr. E. WILLIAMS, 73, Charlotte-street, Portland-place, W. [ADVT.]

Doubling Stone and Ham Hill Stone, of best quality. Prices and Estimates, including delivery to any Station, on application to STAPLE & HANN, Quarrymen, Stoke-sub-Hamdon, Ilminster. Agent, E. CRICKMAY, No. 4, Agar-street, London, W.C. [ADVT.]

Asphalte.  
Seysse, Patent Metallic Lava, and White Asphaltes.  
M. STODART & CO.  
Office:  
No. 90, Cannon-street, E.C. [ADVT.]  
Asphalte.—The Seysse and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.]

Immense quantities of  
DRY WAINSCOT,  
DRY MAHOGANY,  
DRY WALNUT,  
in all thicknesses.  
B. J. HUDSON & SONS,  
Whitfield-st., W., and Great Peter-st., S.W.,  
London. [ADVT.]

J. L. BACON & CO.  
MANUFACTURERS OF  
IMPROVED HOT-WATER APPARATUS,  
FOR WARMING AND VENTILATING  
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.  
No. 34, UPPER GLOUCESTER PLACE,  
DORSET SQUARE, LONDON, N.W.  
Illustrated Pamphlet on "Heating" post free for Twelve Stamps.

# EASTWOOD & CO. (Limited).

WELLINGTON WHARF, BELVEDERE-ROAD, LAMBETH.  
CANAL BRIDGE WHARFS, OLD KENT-ROAD.  
LUDGATE WHARF, UPPER THAMES-STREET.

## LIME, CEMENT, AND BRICK MANUFACTURERS.

SHOEBURY, COWLEY, AND KENT BRICKS, IN ANY QUANTITY DELIVERED ALONGSIDE.

Shoebury Malm Facings and Pavors.  
Stourbridge Welsh and Newcastle Fire Bricks, &c.  
Glazed and other Drain Pipes.  
Dutch Adamantine and Red English Clinkers.  
Red and White Suffolk Bricks.

LOTS ROAD WHARF, CHELSEA BASIN.  
KENNAL WHARF, HARROW-ROAD.  
L. & N.W. DEPOT, MAIDEN-LANE, KING'S-CROSS.

Moulded Bricks of all kinds.  
Red, White, and Black Rubbers.  
Brossley and Yorkshire Hoofing Tiles.  
Ridge Tiles, Terminals, &c.  
Staffordshire Blue Bricks.

## PORTLAND CEMENT

(WELLINGTON BRAND) of Unsurpassed Quality.

Sole London Consignees of Messrs. Gibbs & Co.'s (West Thurrock)

And  
THE ELTRINGHAM COLLIERY CO.'S

## GLAZED BRICKS,

PORTLAND CEMENT,

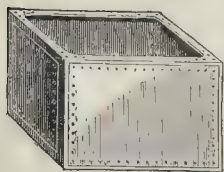
Both White and Coloured,  
which they can offer at very Low Prices.

JUNE 4, 1881.]

THE BUILDER.

# ZINC ROOFING, CORRUGATED IRON ROOFING (FIXED COMPLETE).

GALVANISED IRON  
OPEN CISTERNS  
AND  
CLOSE TANKS  
KEPT IN STOCK;  
ALSO  
MADE TO ORDER  
IN ANY SIZE.



ESTIMATES ON APPLICATION TO

The OLDEST FIRM IN THE TRADE,

## TREGGON

& CO.,

## YORK WORKS,

BREWERY ROAD,

LONDON, N.,

AND

23, JEWIN STREET, E.C.

## CLARK, BUNNETT, & CO., Limited, ENGINEERS AND FOUNDERS,

CONTRACTORS TO THE ENGLISH, FRENCH, AUSTRIAN, AND SOUTH AUSTRALIAN GOVERNMENTS,  
WORKS: LONDON, PARIS, AND NEW YORK.

SOLE MAKERS OF

## CLARK'S PATENT NOISLESS STEEL SHUTTERS.

THE JURY HAVE SELECTED FOR THE HIGHEST AWARD  
**CLARK'S PATENT REVOLVING SHUTTERS,**  
AT THE MELBOURNE EXHIBITION, 1881.

SOLE MAKERS OF

## BUNNETT'S PATENT SAFETY LIFTS.

**BUNNETT'S PATENT LIFTS** are in use in the Royal Buildings, War Office, Somerset House, Post Office, Bank of England, Billingsgate Market, the Brigade Depots, &c.

**CLARK'S PATENT SHUTTERS** are in use in the Royal Palaces, the Government Buildings in England and the Colonies, France, Austria, Hungary, Egypt, Turkey, and America.

CASTINGS OF EVERY DESCRIPTION; IRON DOORS, ROOFS, AND BUILDINGS: IRON STAIRCASES, CRANES AND GRABS, STEAM ENGINES, &c.

Prize Medals:—London, Paris, Vienna, Oporto, Moscow, Dublin, Philadelphia.

No. 99, Queen-street, London, E.C.  
Rathbone-place, London, W.  
No. 162, West 27th-street, New York.  
No. 172, Queen-street, Melbourne.

No. 57, Market-street, Manchester.  
No. 87, Lord-street, Liverpool.  
No. 8, Westmoreland-street, Dublin.  
No. 13, Boar-lane, Leeds.

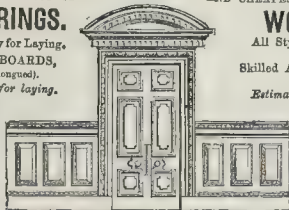
Rue Notre Dame de Victoires, 40, Paris.  
Exchange Chambers, Birmingham.  
No. 3, St. David-street, Edinburgh.

**M. F. C. TURPIN, 22, QUEEN'S ROAD, BAYSWATER, LONDON, W.**

MANUFACTURER OF THE BEST AND CHEAPEST

## PARQUET FLOORINGS.

150,000 ft. super. in Stock, ready for Laying.  
**RIGA INCH OAK FLOOR BOARDS,**  
In perfect repair (grooved and tongued).  
Immense Stock always ready for laying.



## ARTISTIC JOINERY.

**THIN PARQUET** (Turpin's Patent), 3/16 inch thick, prepared on three deal back laminations, equal in wear solid Parquet. Used for veneering old existing deal floors, and is susceptible of removal at pleasure.

Construction.

## WOOD CARVINGS.

All Styles executed for the Trade at Special Rates.  
Skilled Artisans sent to all parts of the country.  
Estimates and Designs on Application.



Ornamental  
Parquet.  
Deal  
Backing.



**DICK RADCLYFFE & Co., F.R.H.S.**  
Seed Merchants and Horticultural Decorators,  
128 and 129, HIGH HOLBORN.



## SEEDS.

Horticultural Requisites

## WINDOW CASES.

Ferneries Built and  
Furnished.

## PLANTS.

Queen Anne Window Cases,  
Early English Conservatories,  
Old Style Aquaria and Fern  
Cases, Conservatories and  
Window Cases in Old Style.  
Registered Designs.

Architects' and Builders'  
Designs specially prepared.

Illustrated Catalogues Gratis  
and Post Free.

Window Gardening.

Conservatory

Furnishers.



**DICK RADCLYFFE & Co., F.R.H.S.**  
Seed Merchants and Horticultural Decorators,  
128 and 129, HIGH HOLBORN.

## BULBS.

Garden Requisites.

## WINDOW BOXES.

Conservatories Built and  
Furnished.

## FERNS.

The Fernery in H.R.H. the  
Prince of Wales's Pavilion at  
the Paris Exhibition was  
executed by **DICK RAD-  
CLYFFE & Co.**

## TESTIMONIAL.

"Aldershot, June 10, 1880.  
MR. RADCLYFFE.—I have  
to state that H.R.H. the  
Duke of CONNAUGHT is very  
much pleased indeed with the  
Rockwork in the Conserva-  
tory. (Sir) J. C. EPHRAIM  
Colonel C.B."

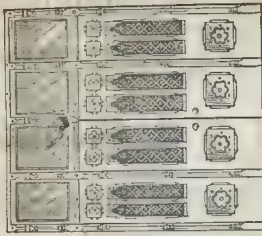
## Horticultural

Builders.

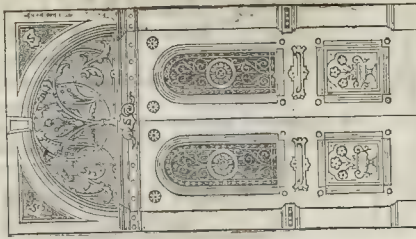
Garden Furnishers.



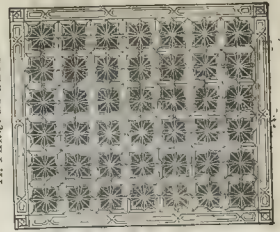
5. VESTIBULE SCREEN.



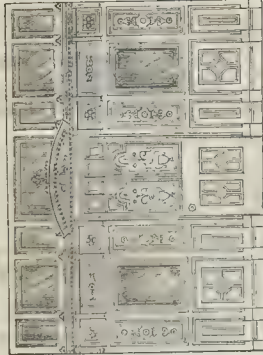
9. BANK DOORS.



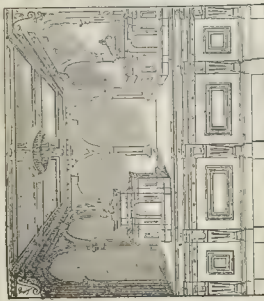
14. PARQUET FLOOR.



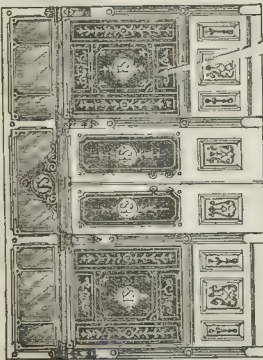
4. BANK OR OFFICE SCREEN.



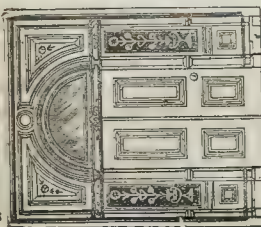
3. BANK INTERIOR, SHOWING COUNTER AND DESKS.



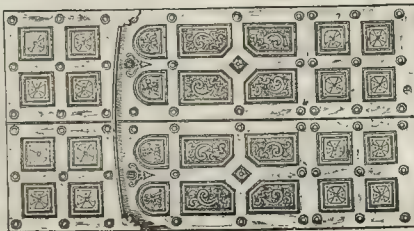
2. BANK OR OFFICE SCREEN.



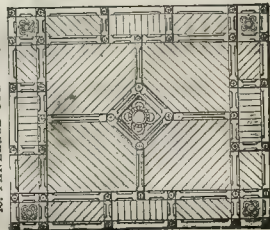
1. DESIGN FOR A HALL DOOR.



6. BANK DOORS.

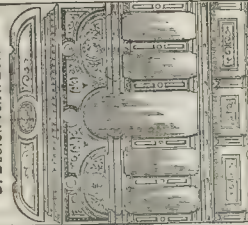


10. PANELED CEILING.



PRIZE MEDALLIST  
AT THE  
LONDON, VIENNA,  
PHILADELPHIA AND  
CAPE OF GOOD HOPE EXHIBITIONS.

8. DESIGN FOR A BUFFET



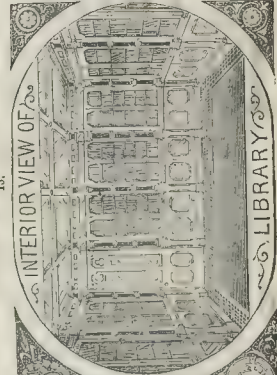
**FREDERICK SAGE,**  
MANUFACTURER OF THE BEST  
CLASS OF HARDWOOD JOINERY FOR  
BANKS, OFFICES, MUSEUMS, LIBRARIES  
PRIVATE RESIDENCES, BUFFETS &c.  
STEAM WORKS, 80 TO 84, GRAY'S INN ROAD,  
LONDON.



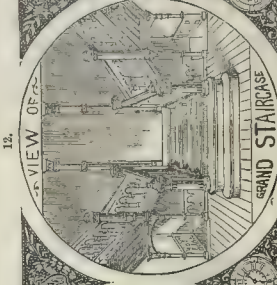
PHILADELPHIA.

ESTIMATES ON APPLICATION.

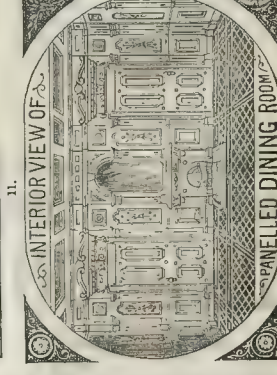
13.



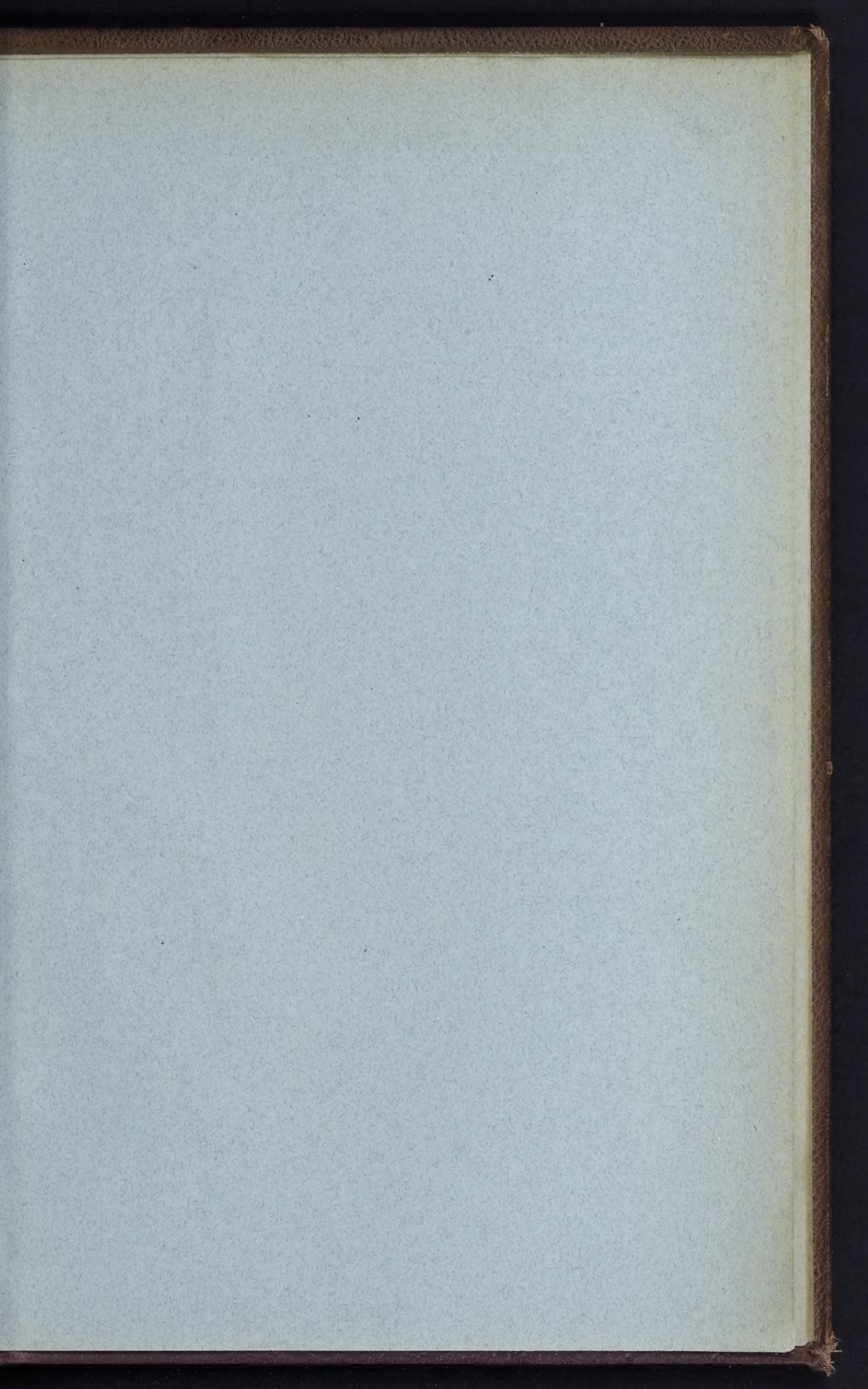
12.



11.



(SEE LIST AT STATIONERS' HALL)





GETTY CENTER LIBRARY



3 3125 00702 3365

